

VOL. XXXVIII No. 7 JULY 1953

MECCANO

MAGAZINE



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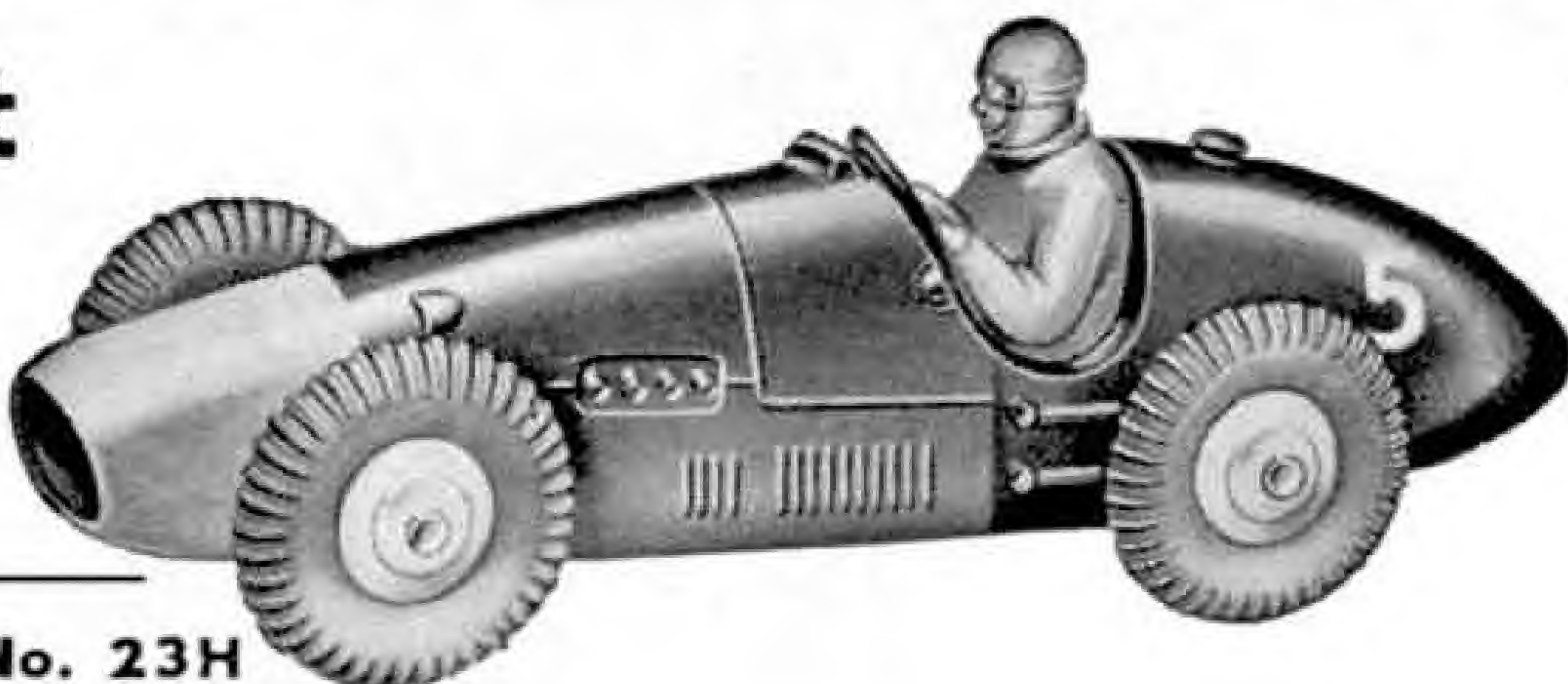
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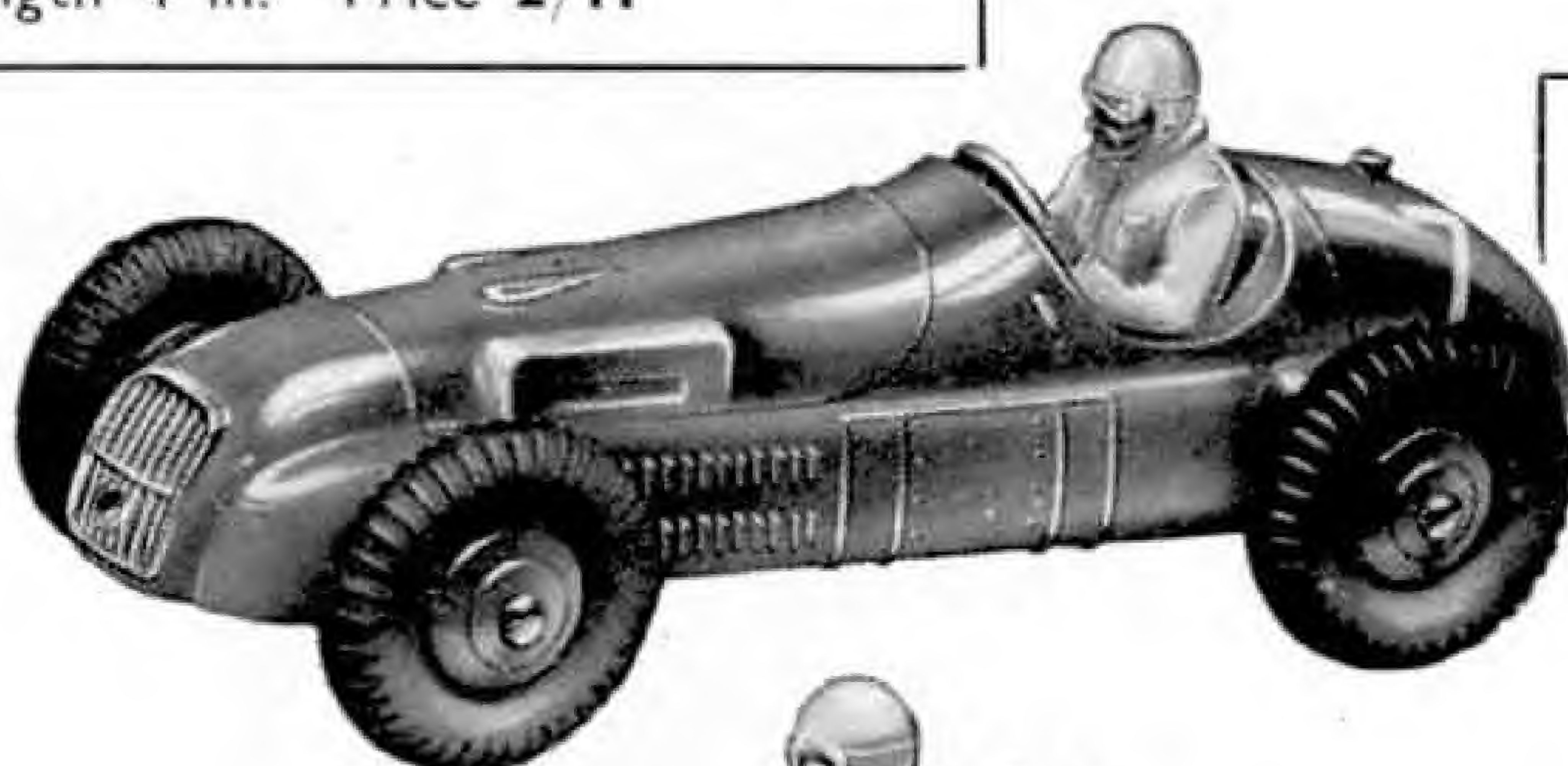
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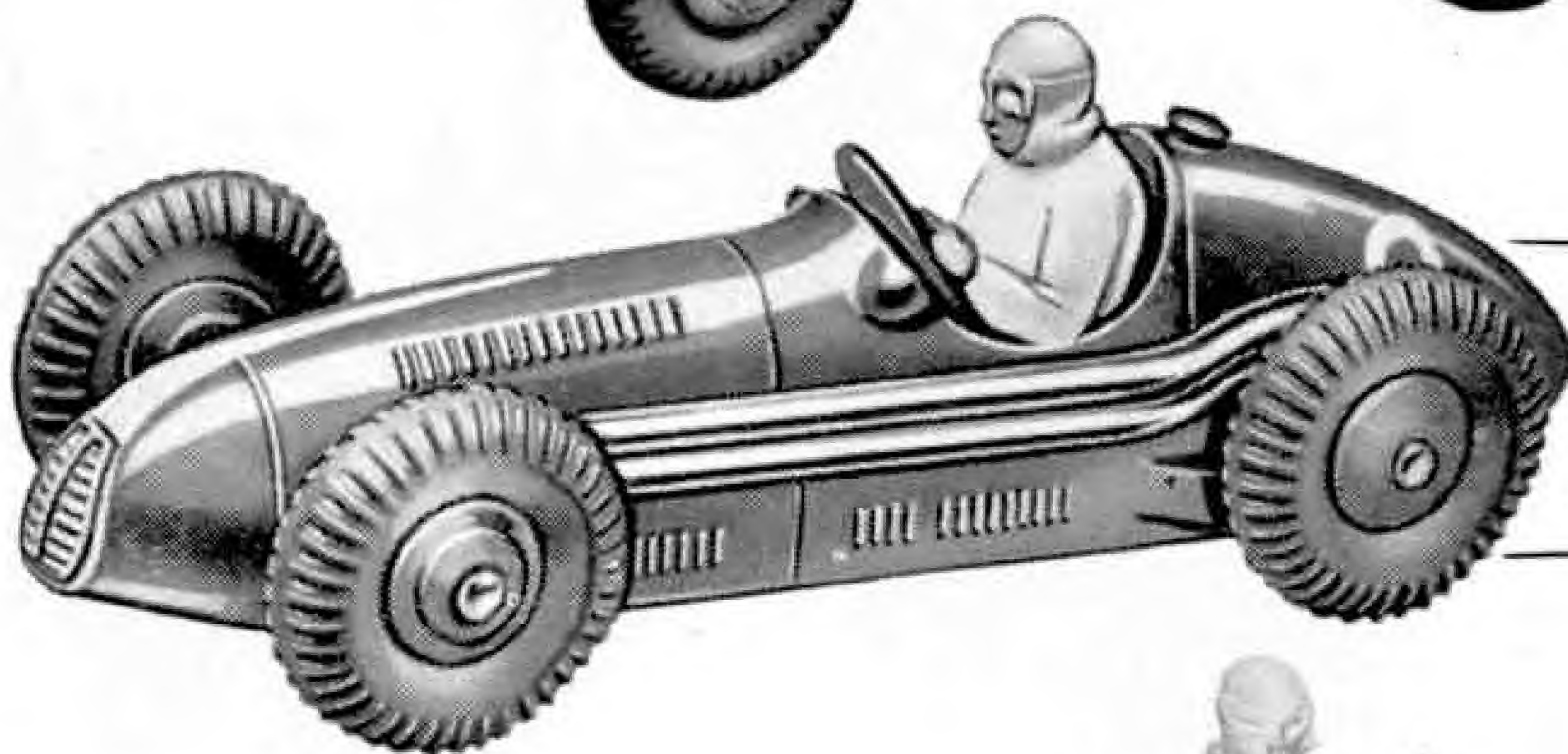


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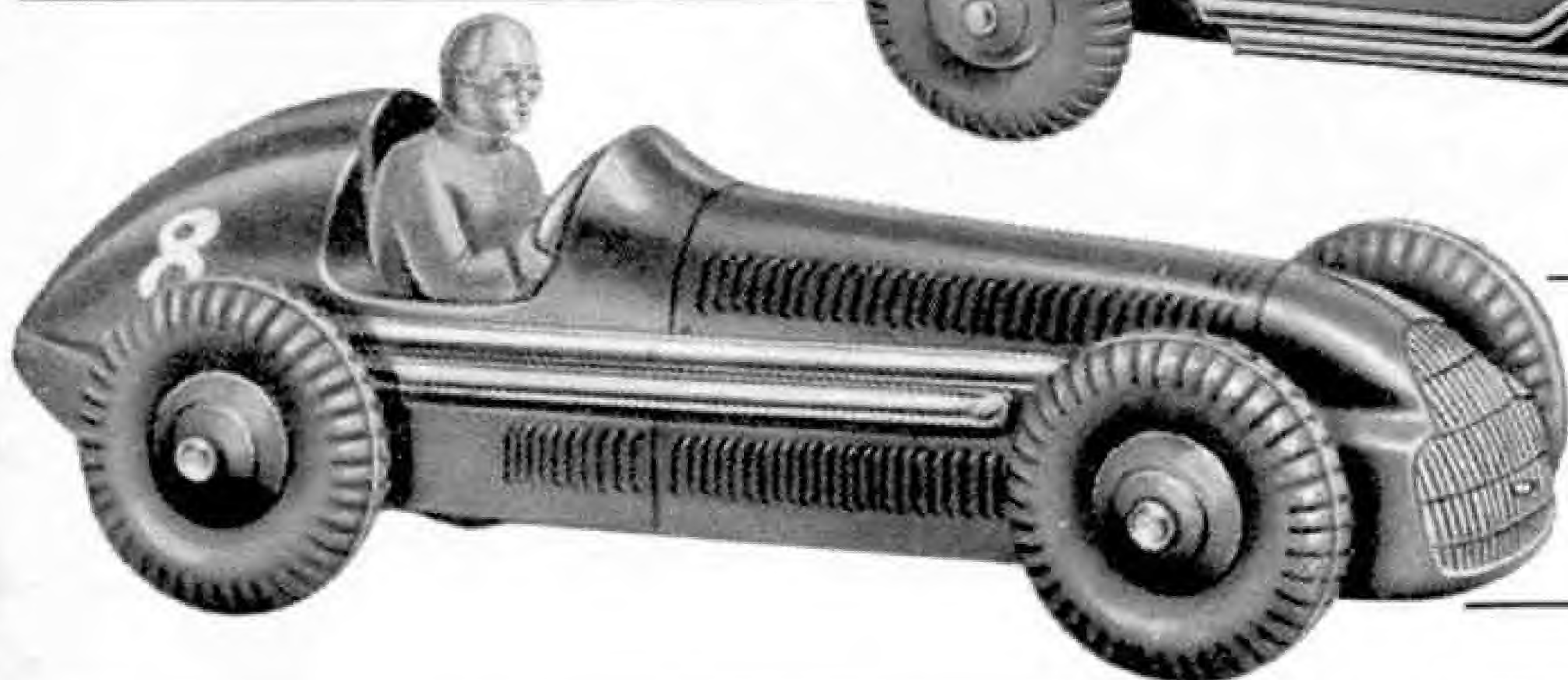


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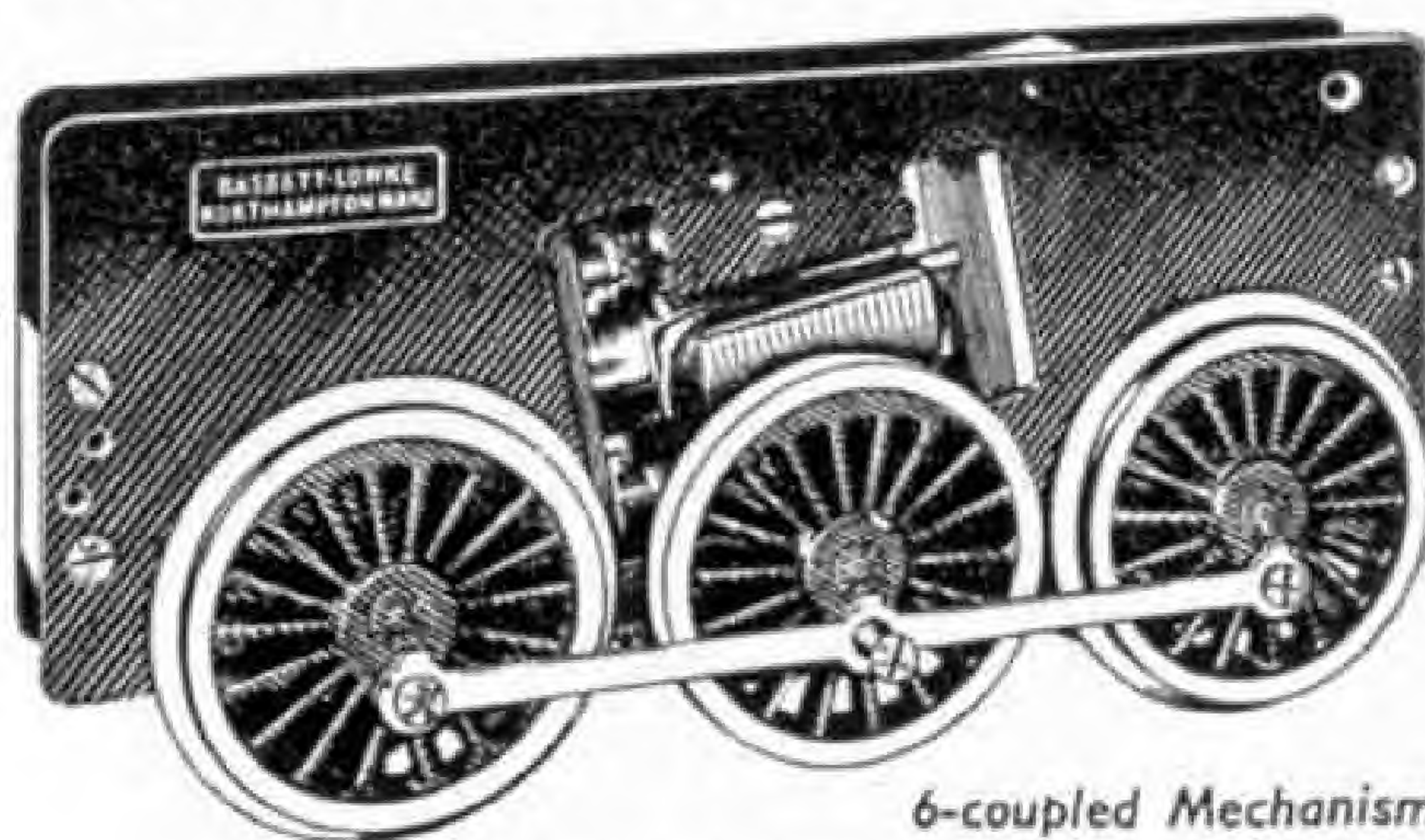
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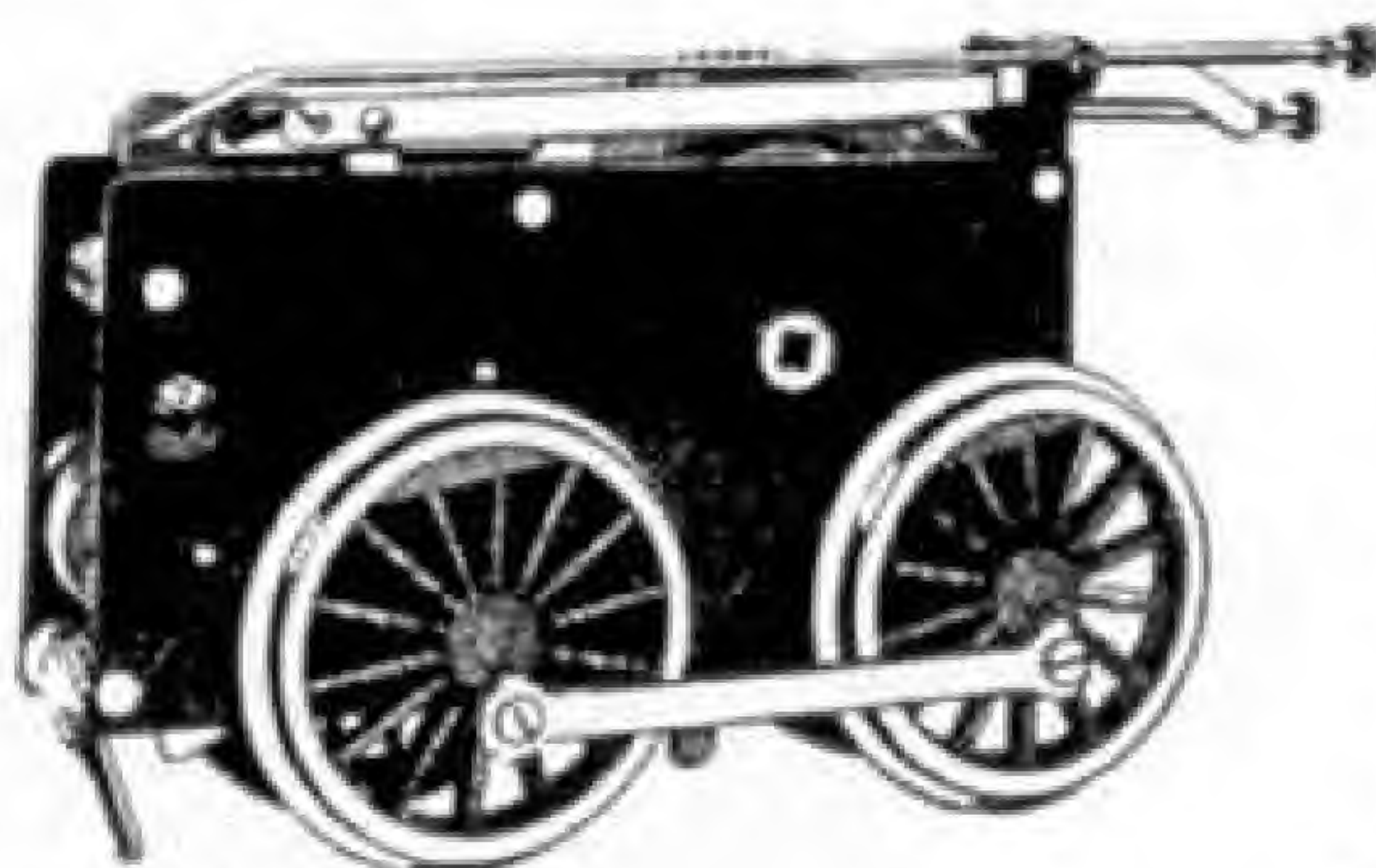
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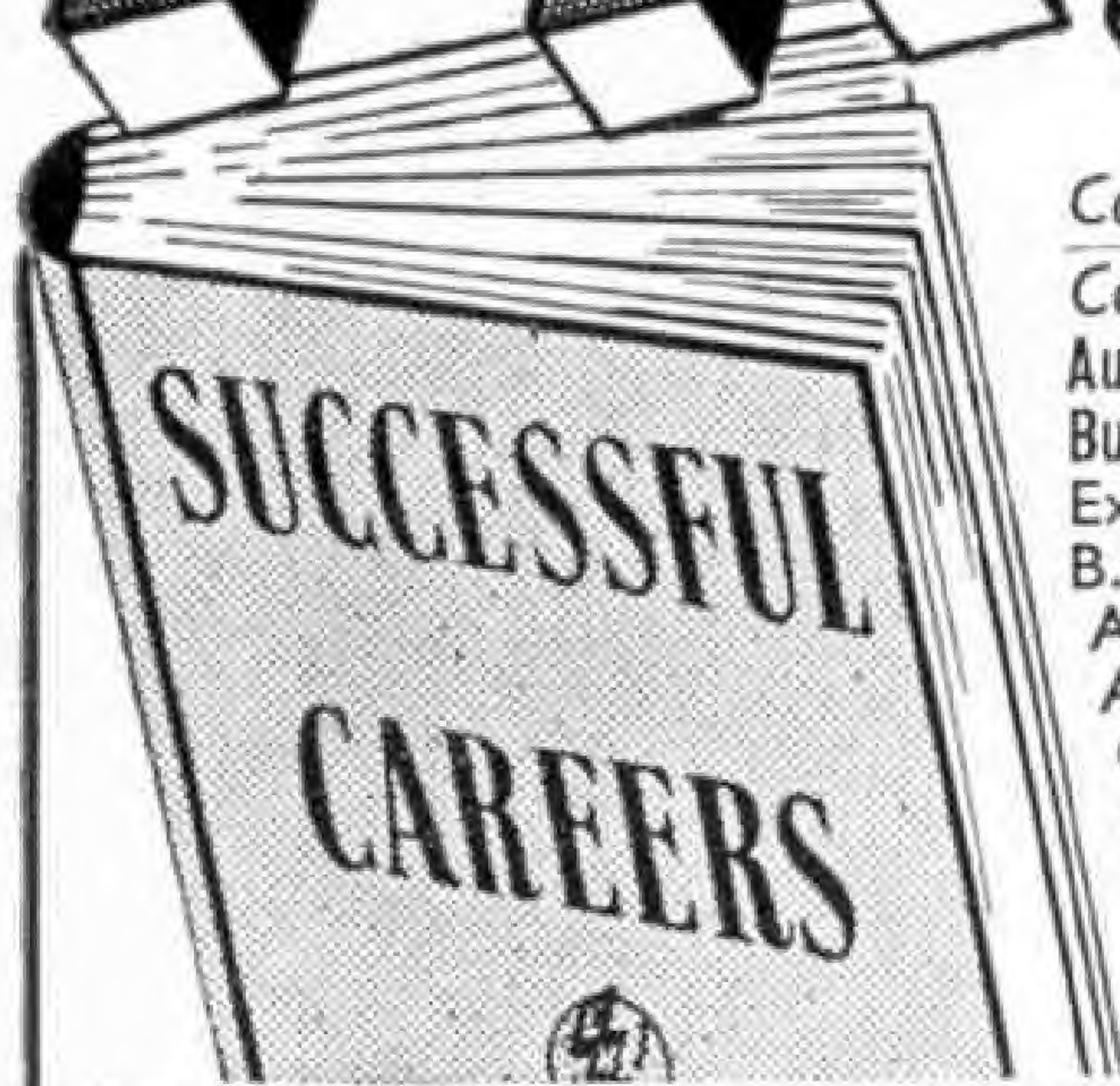
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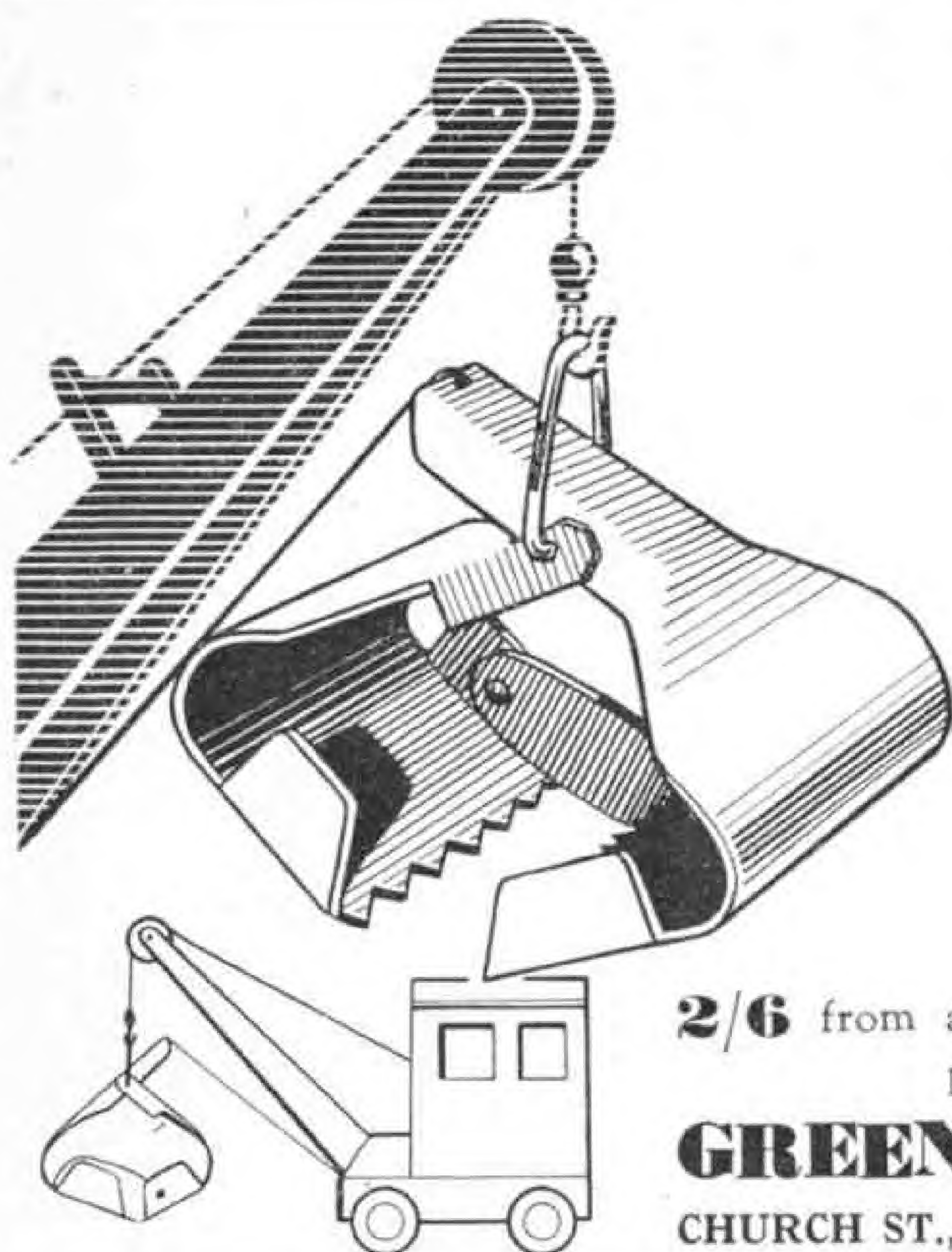
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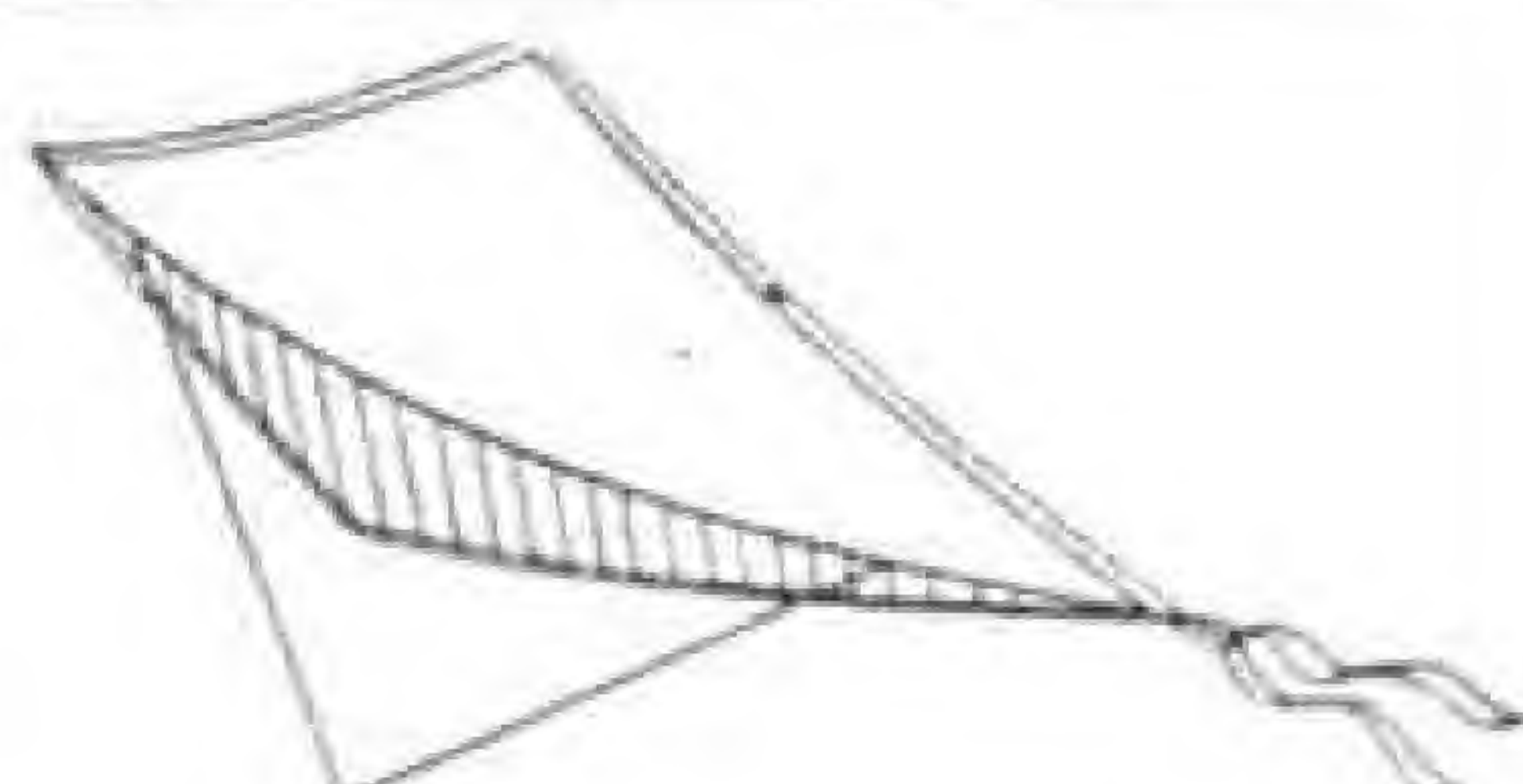
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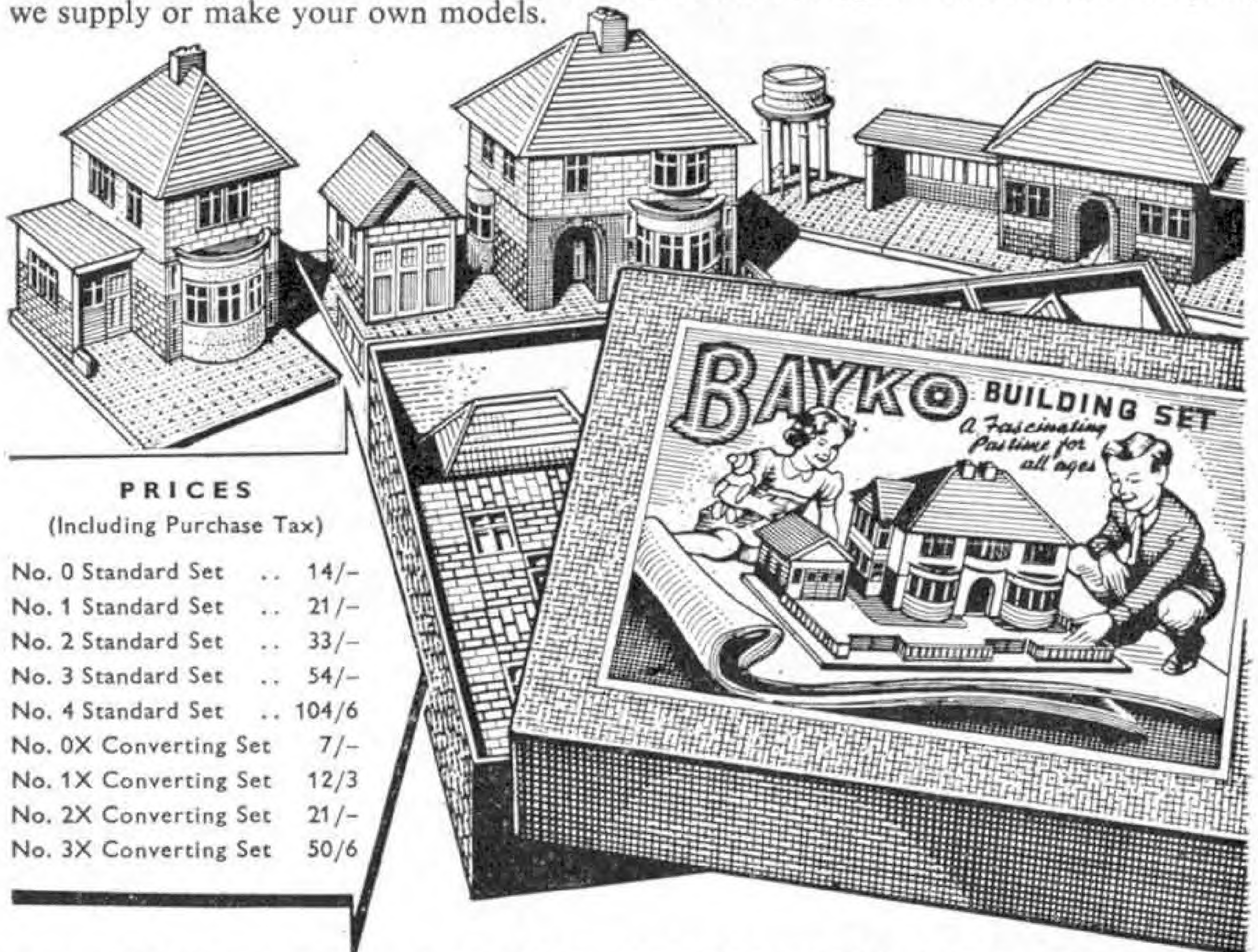
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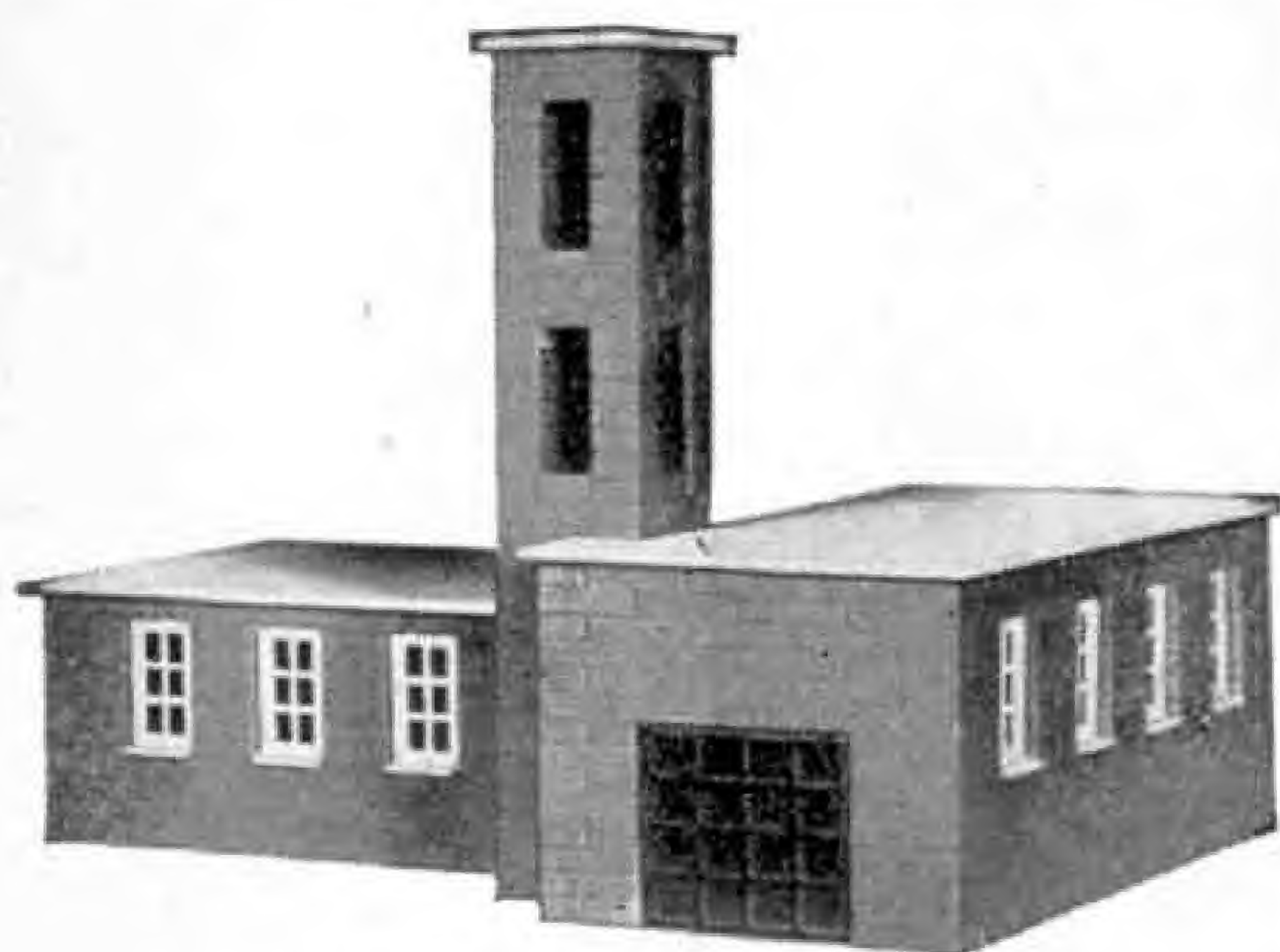
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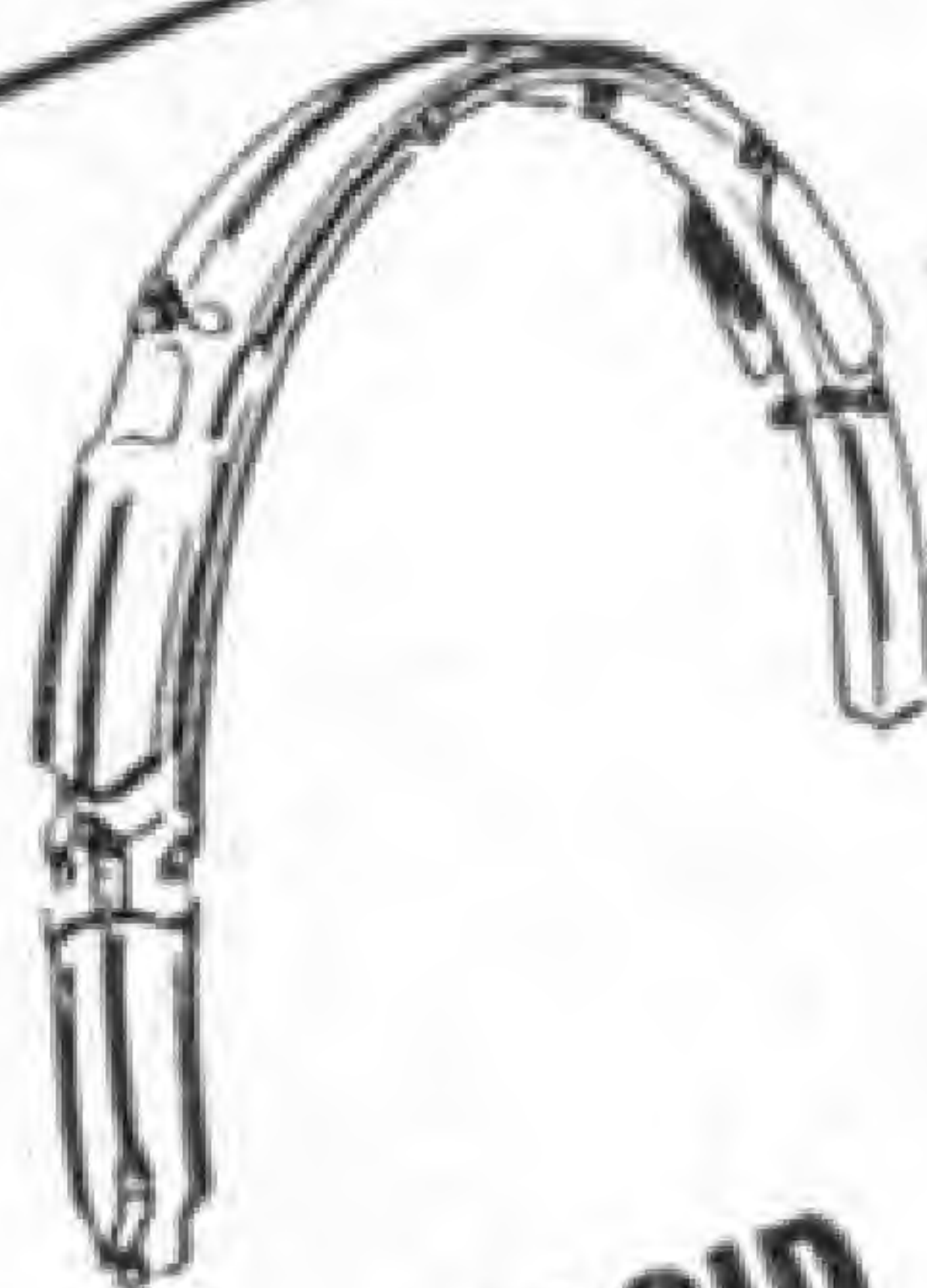
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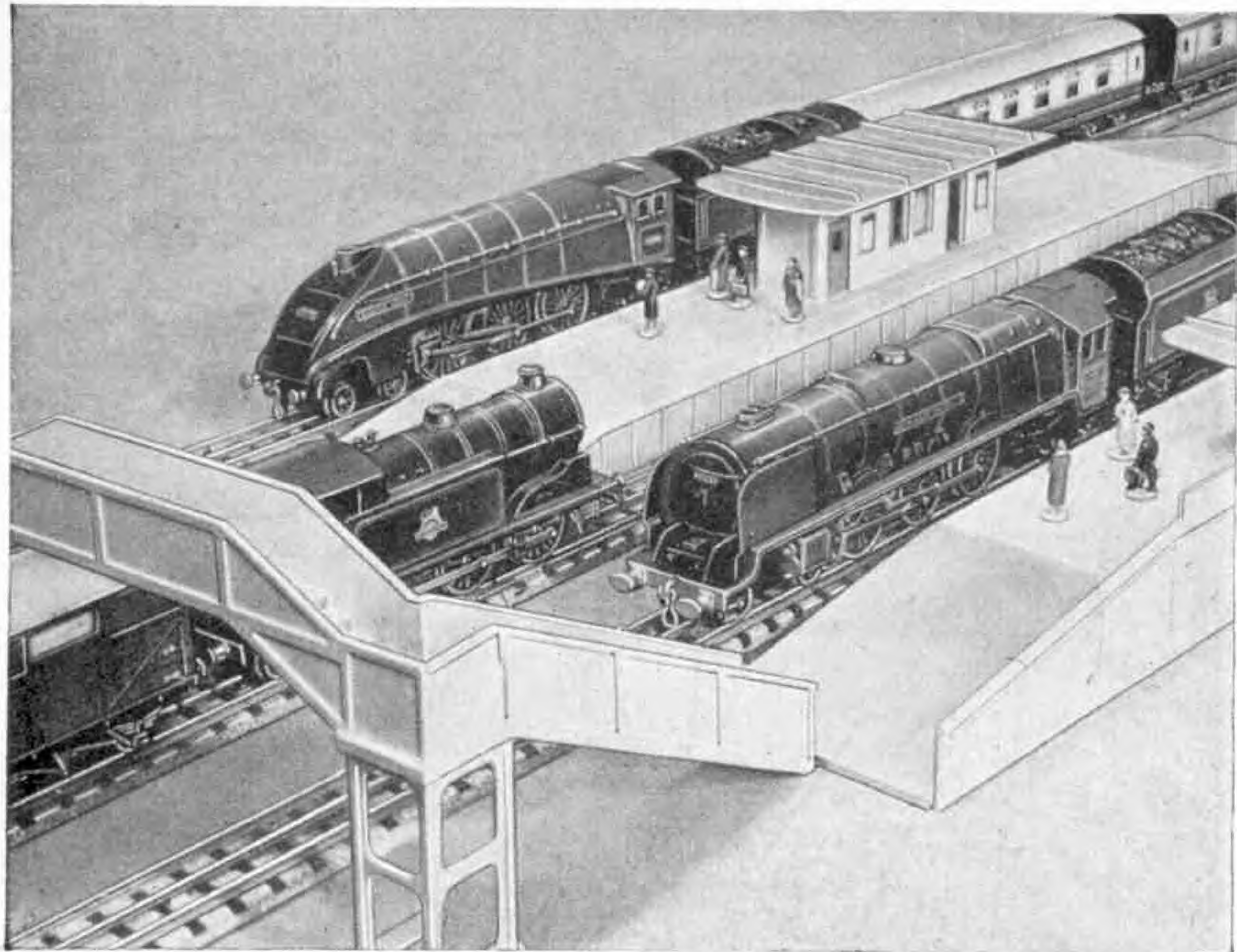
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MECCANO

MAGAZINE

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Vol. XXXVIII
No. 7
July 1953

Now for the Future!

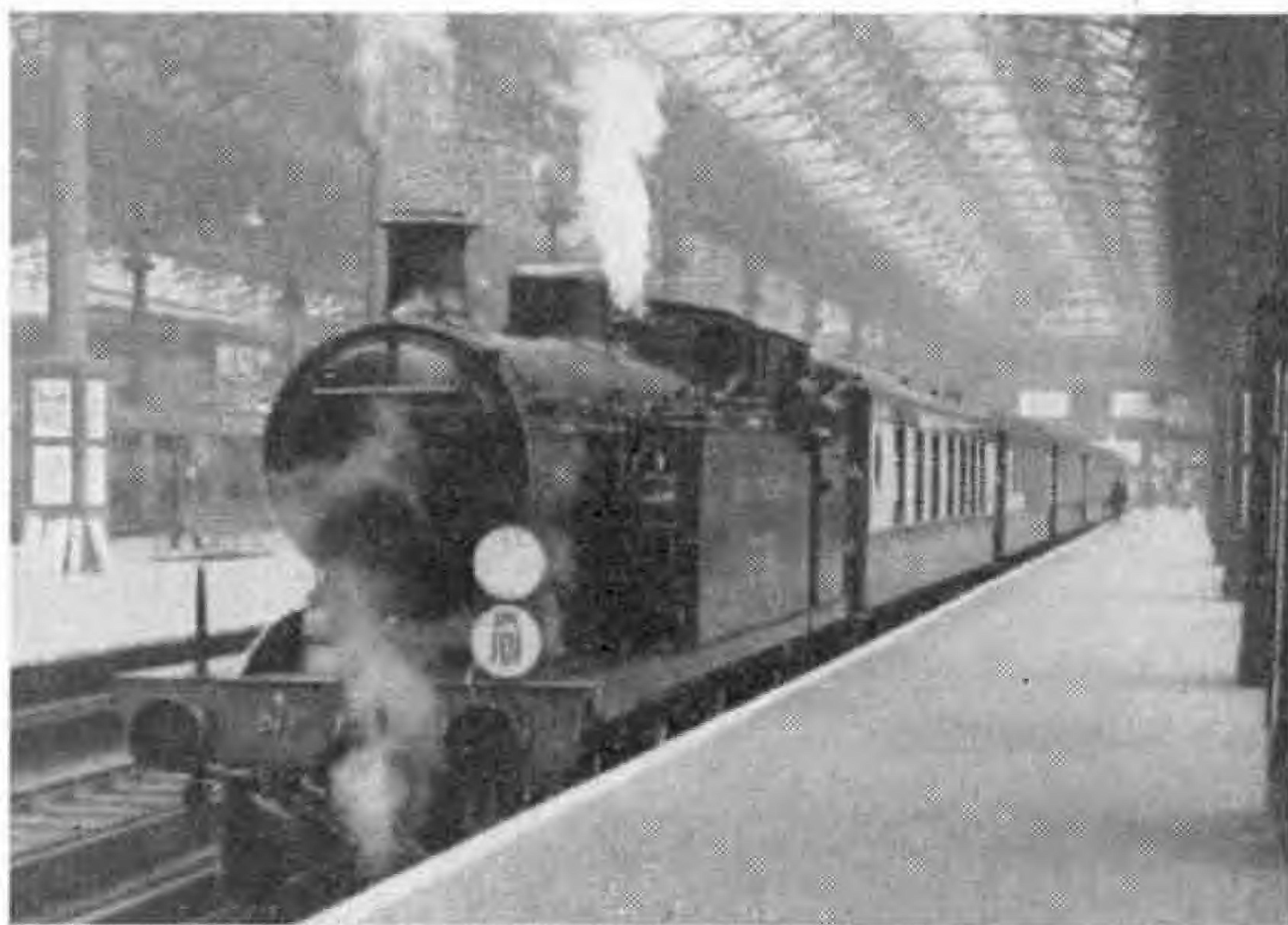
Coronation month is past, but it will be a very long time indeed before it is forgotten. We all expected the event to be memorable, but few of us could have realised how stupendous it was going to be. My belief that ability to follow the ceremony itself on the screens of our television sets would not mean any lessening of the crowds that would greet our Queen along the processional routes was more than justified. Never before was any King or Queen greeted with such tremendous enthusiasm as was Her Majesty on Coronation Day, and if the voices of the many millions who followed the great event while seated in their own homes were not heard, their acclamations were no less fervent and sincere.

Now for the future. Most of you are still young and vigorous, interested in the future rather than the past, and it is for you to share in the task of making the Coronation the beginning of a new and more brilliant era in our history. The dominating feature of this new age must be our Queen's smile, an expression of friendliness among ourselves that must also be symbolic of our outlook on the peoples of the entire world.

Progress in the Skies

The conquest of Everest only a few days before the Coronation was a wonderfully imaginative beginning for the new Elizabethan Age. One of the other fields in which we already lead is aviation, in which we have shown the way by the production of the Comet jet airliners of

B.O.A.C. and the Viscount airscrew-turbine aircraft of B.E.A. Greater air traffic demands increased ground facilities to deal with it, and just before the Coronation B.E.A. opened London's fine new air terminal at Waterloo, where 15,000



A Pullman Special at Victoria in Southern Railway days. The engine is No. 2091, which as B.R. No. 32091 was the last of the well-known Marsh "13" tanks to remain in service. Photograph by J. F. Taylor.

passengers can be dealt with in a day. Next month you will be able to read a fine description of the terminal that will help you to realise how air traffic is growing, and why.

There is magnificent progress across the Atlantic too, as the August *M.M.* will show, for it will contain a fine article on Boeing's new B-47 Stratojet six-jet sweptwing atom-bomber, which recently completed 1,000 hrs. intensive test flying.

The Editor

Highland Games

By W. H. Owens

AMONG the most interesting of our summer sporting pageants are the Highland Games. These traditional Gatherings of the Clans are held at about twenty different centres over the northern half of Scotland, and the most famous of all is the Braemar Royal Highland Gathering, on Deeside, which is usually attended by the Queen and other members of the Royal Family.

A visit to the Games is something to be remembered for a very long time, especially if one is lucky enough to see

natural arenas have been used for this purpose for hundreds of years past.

The great range of mountains that we know today as the Grampians cut off the far North from the rest of this island, and behind that natural barrier life went on more or less unchanged for over a thousand years. Rival clans may have raided one another's preserves, stolen each other's cattle, and skirmished up and down the wild glens and straths, yet they would always unite their forces for common defence whenever an invader from outside threatened their lands and homes.

So the ceremonial gatherings among the hills of the Mackays, MacDougalls, Stewarts, Camerons, Duncans and the rest were not merely trials of athletic skill, but rehearsals for actual warfare. Nowadays the Games continue as an expression of the Scots' patriotic fervour and are symbolic of the bygone battle triumphs and stalwart independence of the Gaelic race.

An interesting old legend tells us something about the beginning of the celebrated Braemar Gathering, which during recent times has attracted such vast crowds of spectators

that it has been likened to Derby Day in the South.

Nearly nine centuries ago, King Malcolm Canmore of Scotland is said to have called together a great meeting of clansmen to this beautiful natural arena beside the River Dee. His purpose was to choose a strong, swift and trustworthy messenger from among his Highland followers to serve him as and when the need arose. The King set the contestants various trials of athletic skill and daring, but these were carried out so well by all that he had to devise one supreme test—more difficult than any which had gone before.

Rising sheer from the river plateau is the high, rocky crag known as Craig Coilach, to climb which calls for the



Throwing the hammer at the Highland Games at Portree in the island of Skye. Scottish Tourist Board photograph.

them staged in the wilder parts of the Highlands against the fine scenic background of mountains, moors and lochs. The onlooker marvels at the skill and prowess of those tall, kilted Highlanders, competing in such trials of strength as tossing the caber or throwing the hammer. And he is thrilled by the music of the massed pipe bands as it echoes about the surrounding hills.

Some of the biggest events of this kind are held nowadays in favourite holiday towns, such as Dunoon or Oban, where they provide a major attraction for visitors from the South and from overseas. But the authentic settings for the Games are really villages or townships tucked away amid the mountain glens, where the

greatest nerve. King Malcolm declared that whichever man or youth should reach the crag summit first should be appointed Royal Messenger. Three brothers, one of them still a boy, volunteered the climb, and it was the youngest who gained the dizzy height in record time.

For many centuries afterwards the race up Craig Coilach was among the regular features of the Braemar athletic competitions. But it was discontinued at the request of Queen Victoria, who considered its hazards too great after a number of climbers had suffered painful accidents on the crag.

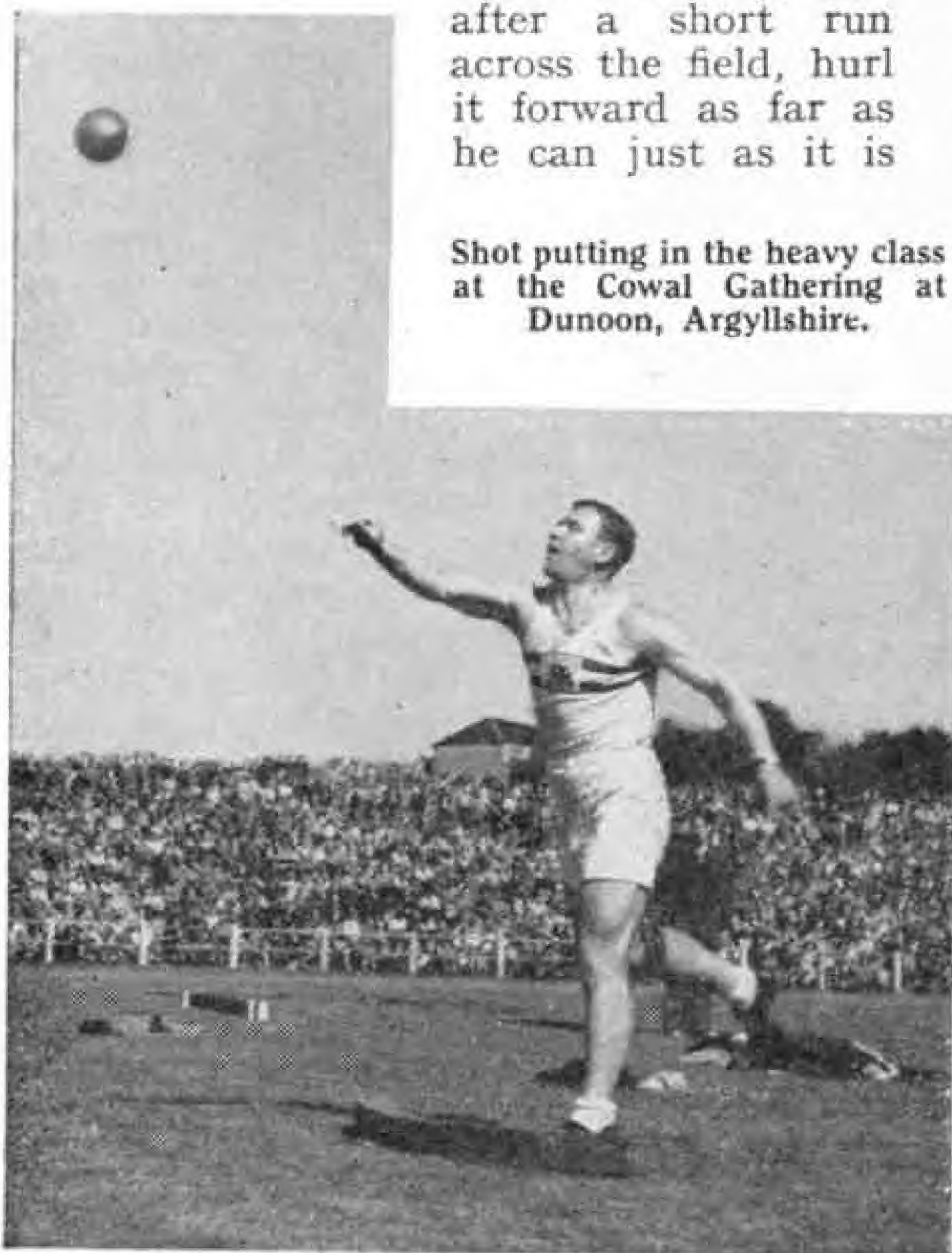
A hundred years ago there were only five athletic events at the Braemar Gathering, but nowadays there are nearly sixty. They include, of course, the old Gaelic sports of putting the heavy stone, throwing the hammer and tossing the caber. In the last of these the competitor has to lift a 17-ft. fir trunk vertically, and after a short run across the field, hurl it forward as far as he can just as it is

about to fall. This indeed is a tremendous trial of strength, and a superb feat of athletic skill to watch. A caber was originally the central roof support in the



Judging the piping contest at the Portree Games. Scottish Tourist Board photograph.

Shot putting in the heavy class at the Cowal Gathering at Dunoon, Argyllshire.



primitive Highland dwellings of olden days.

Besides these ancient native sports, the athletic side of the Games today includes wrestling bouts in true Scots style and the more familiar high jumping and long jumping, cross-country and track running, and hill and obstacle races of various kinds.

Highland dancing to the music of the bagpipes also has an important place at the Games. On raised platforms in the sports' arenas young male dancers and their girl partners—all dressed in ceremonial costume, including the tartan kilts of the clans—perform the traditional Highland fling, foursome reels, sword dances and many a local reel or jig that is rarely seen now except at these summer meetings. Piping and piping competitions form the musical background all day long, the gay reels alternating with melancholy Gaelic airs and laments. Most impressive is the army of costumed pipers, one hundred strong, who welcome members of the Royal Family at Braemar.

Other important centres of the Games include Inverness, which was once the chief rallying point of the Highland armies, and Fort William, where the annual Lochaber Games are a direct link with the stirring times of Bonnie Prince Charlie.

Filming the *Titfield Thunderbolt*

By Colin G. Maggs

ON Monday, 9th May 1910, the Camerton and Limpley Stoke Branch of the G.W.R. was opened. The line, which is in North Somerset, was constructed mainly for coal traffic, though for some years there was a passenger service. An interesting feature of the railway was the construction of the greater part of its length either on or beside the Somerset Coal Canal. Because of the closing of collieries which the line served, the last train ran on 14th February 1951.

The branch has been used for filming three times. The first was in 1931, when the *Ghost Train* was filmed at Camerton. The second was in November 1937, when some of the scenes of the Edgar Wallace thriller *Kate Plus Ten* were shot at a disused colliery at Dunkerton. The third time was in June of last year, when the *Titfield Thunderbolt* was filmed on the line.

Very briefly the story of this film is that the villagers on the Western Region

Combe Station (near Bath), there appeared a notice *Titfield Station*, for this was to be its name for film purposes, and on the single platform the boards read *Titfield*. The track was weeded—it had not been used for nearly two and a half years—the station was renovated and flower beds were made on the platform. The level-crossing gates were removed for convenience, but since the lane was a dead-end one, this did not endanger the public.

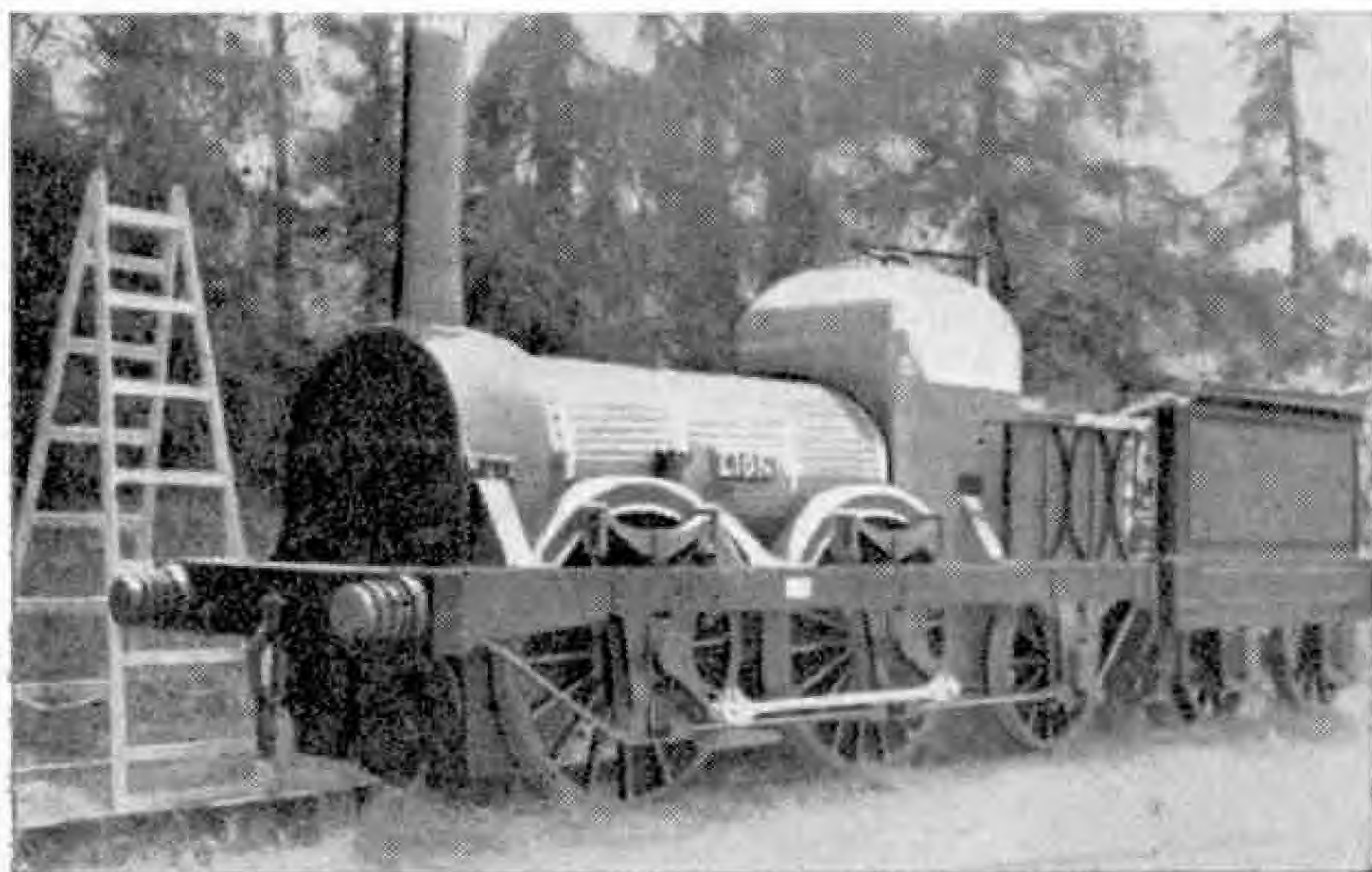
On Sunday 15th June a train entered the station, hauled by Western Region No. 1456, an 0-4-2T, and consisting of a cattle truck, a low bogie coach from the Eastern Region Kelvedon and Tollesbury Branch that formerly belonged to the Wisbech and Upwell Tramway, and a Western Region brake van. The shed code-plate was removed from the smoke-box door of the engine, as was the LLY painted on the sides near the front

buffer beam to indicate Llanelly Shed. The B.R. cast iron number plate still remained on the front.

Four days later the *Lion*, the 114-year old 0-4-2 formerly belonging to the Liverpool and Manchester Railway, arrived at Monkton Combe. It was brought from the North on a low-loading wagon to Westbury, the nearest locomotive depot, where it was to be put into working order. It was found to be in perfect condition, and when put into steam, it did the ten mile journey from Westbury to Limpley Stoke in an hour and

five minutes. It travelled light and was restricted to a speed of 10 m.p.h.—the only brake was four wooden blocks on the tender wheels. After an interval the *Lion* was driven along the branch line to Monkton Combe.

When the filming started I was agreeably surprised by the lack of noise. The quiet village was not disturbed at all, for the only sounds that could be heard, and then only at the scene of action, were



The *Lion*, the historic locomotive that plays a notable part in the *Titfield Thunderbolt*. The engine is here seen in the station yard at Monkton Combe, which became *Titfield* for the purposes of the film.

Titfield to Mallingford Branch take over the line when it is going to be closed. The local bus company wreck the engine with a steam roller the night before an Inspector is to inspect it to see that it conforms with the Board of Trade Regulations, but the villagers manage by taking *Thunderbolt*, the locomotive used for the opening of the line a century before, from the local museum.

In June, over the entrance to Monkton

the hum of a generator and the director's loudspeaker, used so that he could be heard by people working a short distance away.

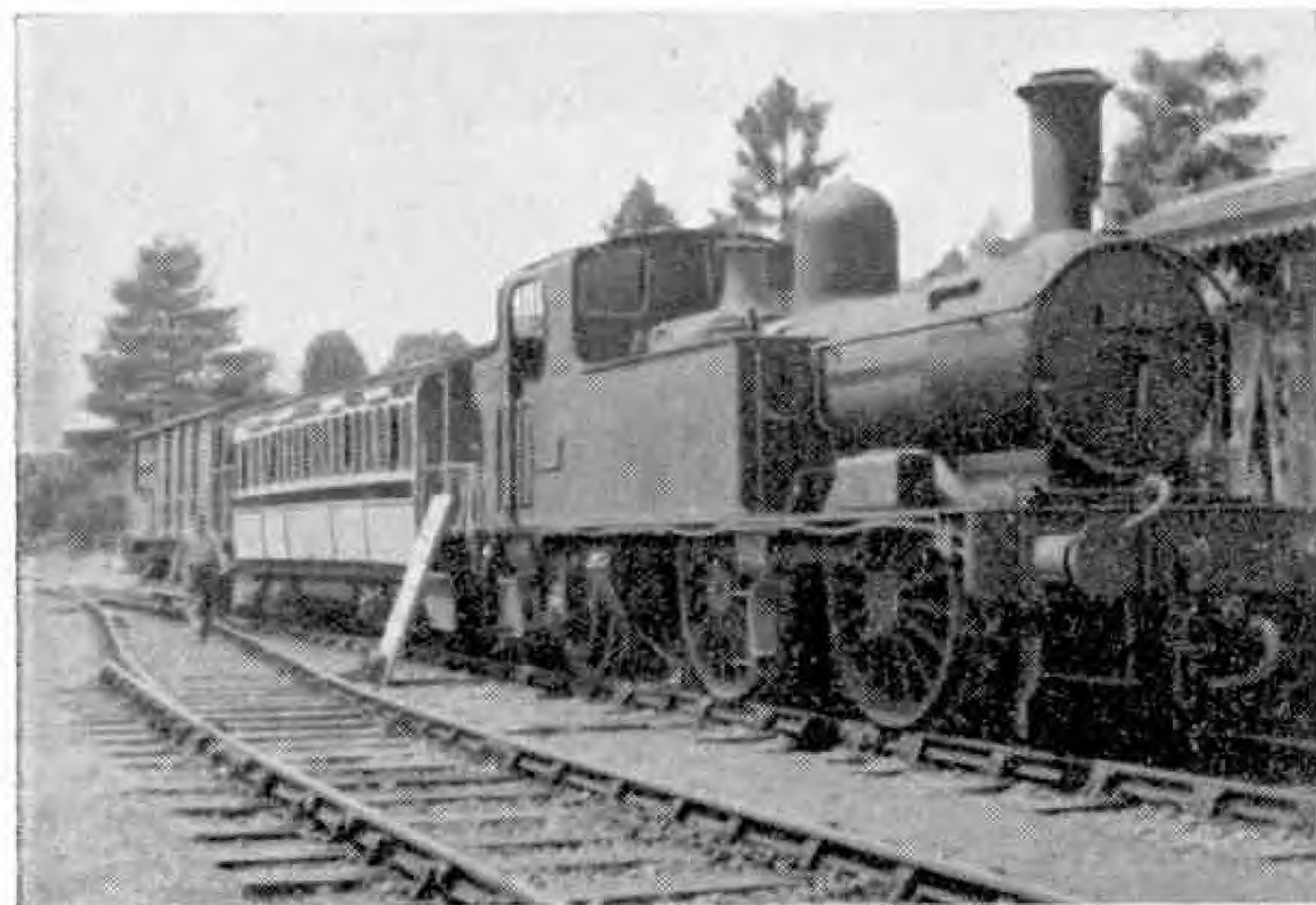
Films are not made quickly. It took almost two hours rehearsing before just one shot could be made of a train coming along the valley and into the station. Chalk marks on the platform showed

Lion, which had been renamed *Thunderbolt*, was running up and down the line with this coach and a brake van, which had a wire basket full of flowers hanging from the roof at the back of the guard's "veranda."

In the story a battle takes place on a level-crossing between a steam roller and the 0-4-2T 1401. The level-crossing at Monkton Combe was not considered suitable, so one was constructed specially for the fight, which was won by the tank engine.

There were two film units, the first operating around Monkton Combe with 1401 and the other shooting scenes with *Thunderbolt* along the line towards Camberton. Later the units changed engines and trains.

On 21st July the *Thunderbolt* went to Temple Meads Station, Bristol, where the Mallingford Station scenes were shot, but three days later it was back at Monkton Combe. The location shooting was almost finished and by



Western Region 0-4-2 locomotive No. 1401 also played a part in the filming.

where the engine had to stop. There was not sufficient smoke coming from the chimney to suit the producer, so the brake in the brake van was applied to make the engine work harder and to produce more smoke and steam. Arc lights were used to illuminate shadows and large mirrors supplemented these by reflecting sunlight into the shade.

Besides No. 1456, No. 1401 of the same class was used. The engines needed water and this was supplied from a stream by a fire pump and hose to a water-tower, which appeared normal but was actually made of ply-wood cleverly painted to look like iron plates and concealing a galvanised iron tank that held the water.

Besides the bogie coach there was a full size model of an old railway coach. It was yellow and brown, had three compartments and looked rather like the bodies of three stage coaches put together. The coach had no chassis, but was placed on an ordinary well-wagon. By this time,

mid-August things were almost normal. The level crossing gates were replaced and the distant signal near the station, green all over during the filming, was painted in its proper colours.

Finally, on 19th August, an 0-6-0 came into Monkton Combe with about half-a-dozen low sided wagons and removed all the film "props." It is sad to think that this may have been the last train to run over the line.



The temporary sign that transformed Monkton Combe station into Titfield.

Building a Railway Bridge

A Novel Scheme for Erecting the Girders

A NEW double track railway bridge has been erected across the River Severn near Gloucester. This is at Over Junction, on the Western Region main line from Gloucester to South Wales, and it crosses the western channel of the river at a point just downstream of the old bridge.

The bridge has three skew girder spans over the waterway, each 71 ft. in length, and one 15 ft. reinforced concrete span at each end. The longer spans have each two main girders, 81 ft. in length, which are spaced 25 ft. apart.

The most interesting feature of the building of this new bridge was the manner in which the 81 ft. girders for two of the spans were placed in position by a single standard 45-ton breakdown crane. Those for the span near the Gloucester end of the bridge could be lifted directly off wagons standing on the down line on the old bridge, but the distance between the old and the new bridges was too great to allow the girders for the other two spans to be dealt with in the same way.

To meet this difficulty the girders were fitted with extension nose girders. In some instances these weighed about $2\frac{1}{2}$ tons, and increased the length to 108 ft.; in others a longer and slightly heavier nose girder was used, giving a length of



Lifting a girder for one of the spans of the new bridge across the Severn at Over Junction. The nose piece added for erection purposes is clearly shown.

117 ft. 6 in. The total load was beyond the capacity of the crane when working at the radius that would have been necessary to place the girder in its final position in a single lift. The plan adopted therefore was to lift each girder in turn, with the breakdown crane suitably placed, and to swing it out over the water until the end of the nose girder could be landed on the far pier of the span.

On this far pier was a ball-bearing turntable, on which were rollers. With the end of the nose girder on the rollers, the lifting "nips" were moved further along the girder and another lift was made by the crane, with the result that the girder was launched forward on the rollers. This was repeated until the whole of the nose girder projected beyond the pier and the main girder spanned the opening. A final lift at the tail of the girder then allowed this to be swung round and lowered on to its bearing at that end, while at the far end jacks lifted the girder clear of the turntable so that this could be withdrawn. The girder was then lowered on to its bearing on the pier.



The turntable, with the rollers on which the ends of the girders of the Over Junction Bridge were landed. British Railways photographs.

Novel Road Safety Training

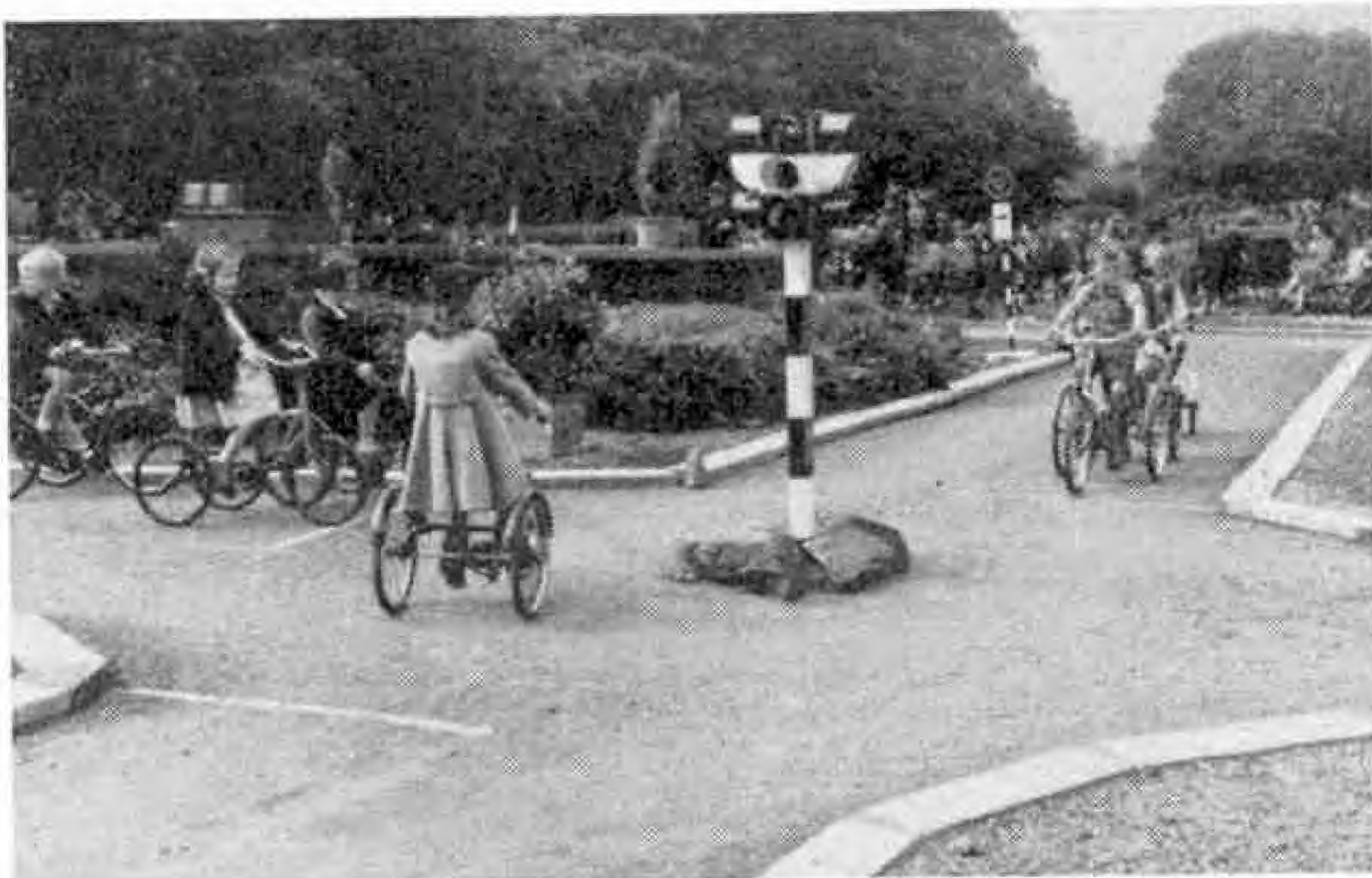
By F. Watson

MOST boys and girls realise the need for care on the roads, and in many towns some instruction is given at school. But not many children can be so fortunate as those living in Burnley, Lancashire. Each summer, during a week of the school holidays, the Burnley Accident Prevention Council, assisted by the police, organise a training scheme in one of the parks, where miniature roads are laid out, complete with all kinds of road signs, including automatic traffic lights that do actually control crossroads.

Children are invited to bring their own bicycles or tricycles and are encouraged to make a tour of the model roads under the watchful eyes of policemen and voluntary workers. Those not making the correct hand signals when approaching crossings, junctions or roundabouts are tactfully told what they ought to have done, and any child can go round as often as he or she pleases. Some cycles and tricycles are available for children who have no machines of their own. There is always quite a queue for the tickets that entitle the holder to borrow a machine for a ride round the

roads, an indication how popular this feature is.

Competitions are held during the week to find those children who give the correct signals in the best and most consistent manner. Additional attractions are other



Children on tricycles at a road crossing on the model road system laid out in a Burnley park during the summer holidays of last year.

sporting events such as running, jumping and sack races, together with a competition to find how far a gas-filled balloon will travel. These balloons are released in the park with stamped addressed cards attached and occasionally one is returned from some place abroad. These competitions culminate in a final test on a route through the streets of the town, and observers at different points watch very carefully the actions of the young riders, each of whom carries a number for identification.

The whole scheme has been very popular for several years, the greatest difficulty being to find enough volunteers to help the police, who regard it as an excellent and pleasant way of helping to make our roads safer. No charge is made, except for the balloons, and many boys and girls practice day after day.



Negotiating the roundabout. This useful road training layout will again be in operation in Queen's Park, Burnley, from the 18th to the 25th of this month.



Nature's Bulldozers

How Moles Live and Work

By R. H. Ferry

BECAUSE they live nearly all their lives underground, we see less of moles than of any of the wild animals of the English countryside, but there is more actual evidence of their presence and activity in the fields than of that of any other species.

The mole is in fact the hardest working and also the hungriest mammal in the country. Its digestive process is so rapid that it is simply compelled to dig for the worms on which it lives in order to keep its stomach full and satisfy its colossal appetite. A mole can eat its own weight of approximately three ounces in twenty-four hours and dig a tunnel of 100 yards through light soil in the same period. It has been calculated that one mole is capable of devouring 40,000 worms in a year.

The mole's life work of digging is carried out in organised and more or less timed shifts of about four hours, starting at sunrise, with short periods for sleep in between. If a mole were to oversleep, or sleep soundly for one whole night, it would literally die of starvation. But fortunately for the little "want"—the mole's common rural name—hunger always acts as an alarm clock and wakes him up. We have evidence that the mole dreams of work, for even when asleep he goes through the actions of digging with his strong upward-turned spade-like forepaws.

Many small insect-eating creatures, such

as hedgehogs and bats, have acquired the convenient habit of hibernating through the long winter months, when they live on their own fat. But the best the mole can do is to "head and tail" a small store of worms, which never lasts long. As the worms go deeper when the surface soil becomes frozen, the moles have to dig harder than ever for a living. Digging makes these animal miners very strong, and they are rightly described as nature's bulldozers. If you stand on a mole hill when a mole is casting up, it is strong enough to tip you right off balance!

The fine picture of a mole at the head of the page shows the spade-like fore feet that he uses to such good purpose. His tail is sensitive to vibrations and is used in the rear to feel for worms.

The earthy castles of fine soil that one sees all over the surface of many meadows are simply made of the excavated earth pushed out of the tunnels, and must not be confused with the real castle or mole fortress thrown up from a nest below. About mid-spring the males or boars leave their long straight runs and join the females or sows in the criss-cross shallow runs just below the surface. In about five weeks three or four blind, naked and pink little moles are born in a nest of grass in the central chamber of the fortress. The young moles do not have a fur coat till they are a month old.

For many years the underground fortresses of moles have attracted the notice of naturalists. A Frenchman, Herminet de Court, who lived in the 18th century, spent a great part of his life making a study of them. Later Di Vaux

went a stage further and drew elaborate designs of the underground chambers and spiral galleries said to be made by moles. But it was not until 1890, when the reliable naturalist Adams made known his observations, that accurate facts came to light. The fortresses, which are really nurseries, are made freshly each year, and each is provided with a quick exit leading perpendicularly downwards. On the slightest sign of danger or vibration from above, the mother mole seizes her young ones in her mouth and dives down to safety.

Though the mole, like the bat, is often referred to as blind, it is not actually without sight. The eyes, however, are no bigger than pin points and so deeply buried in the soft close fur that they take a considerable time to find. Probably moles can just tell day from night. Recently, to test how short-sighted moles are, I held one of these animals in a dark room lit only by one candle. The little beast showed no sign of appreciating the light till the candle was held so close it could feel the warmth of the flame on its nose. The mole's nose is really to all purposes its eyes, for the worms are caught by scenting them—few animals can have a keener smell. But there is a



The author making preparations for timing moles in their runs. The flags are so placed that they are disturbed as the mole brushes past the lower ends of the sticks carrying them.

little tail in the rear which may at times act too as a feeler or detector of the vibrations set up by worms moving about.

Very occasionally moles turn carnivorous and try to catch birds, and in this they show considerable cunning. A bird-hunting mole lies near the surface with its little red tongue just showing. A passing bird mistakes the tongue for a luscious worm, comes down to peck at it, and is quickly grabbed and pulled underground.

Though always fat and plump, few predatory animals hunt moles with the idea of eating them, for their flesh is bitter and rank. Foxes will kill them and roll on them to take on some of the mole's rather musty smell and thus disguise their own scent, but they have to be very hungry to make a mole supper. And as weasels are sometimes caught in mole traps underground, it is thought that they too may at times hunt the "want."

We live in an age of speed and few animals or birds have escaped the stopwatch of modern naturalists. It is always interesting to compare the speed of British animals with that of the record holder—the hare (45 m.p.h.). Le Court boasted that a mole could run "as fast as a galloping horse"—this, of course, we know today to be a gross exaggeration. In fact the all-out speed of a mole in its subterranean tunnel is less than 2 miles an hour.

It is not so difficult to check the speed of moles in their underground tracks as



Timing the run of a mole. Old writers asserted that the animal could travel as fast underground as a horse can gallop on the surface, but this was an exaggeration!

it may at first appear, and there is no reason why you should not make your own time tests if you can find a good mole run when the animals are working. All you have to do is to gather a few slender sticks, slit the tops with a knife blade, and attach a small paper flag which can be easily seen. Now approach the run very quietly and push the base of each flag through the turf in such a way that no mole can pass by underground without touching the ends. Measure carefully the distance between the flags where the test is to take place. When all is ready, stamp hard on the surface, and as a mole sprints along the run you will see the flags tip over. If you know the distance between the flags and take the time on a stop-watch as the flags tip, it is easy enough to work out the exact miles per hour.

Every year we wrestle more secrets from moles, but we have still much to learn. The mole has very close-set fur without any bias. This means that you can brush it any way without letting in wind or

rain. Because of this, the fur is always warm and wind proof when made into gloves, coats, or waistcoats for gamekeepers. This natural make-up or "set" of the fur also helps the little animal when travelling in an earth-sided tunnel, enabling it to go forward or backward

without acting as a brake.

Ordinary fur such as other animals possess would tend to brush down the earth from the sides, causing miniature landslides, and slow down the creature when moving backward. Though we know all this about the mole's pelt, no one has ever yet discovered why earth never adheres to a mole's fur. One can dig up a mole out of sticky moist soil

very suddenly with a sharp spade, yet the animal is always quite clean and the fur has the bloom of a newly plucked grape. Perhaps it is well that nature keeps some of her secrets, or the animals that live on and under the fields would lose a good deal of their interest and fascination, and nature study would be less absorbing than it is.



Moles are not blind, as many have believed, but they have very tiny eyes well hidden under their fur.

Arctic Air Routes

(Continued from page 359)

Pole. And other problems were solved, one by one. One of the most baffling of these was due to the *Polar Twilight*.

At twilight, a pilot cannot see the heavenly bodies, not even the Sun, for at certain seasons this tips out of sight. If you fly in the direction the Sun is moving you can theoretically get caught in a permanent twilight. In any case, in the spring and autumn there is a long period of twilight.

A Canadian, Squadron Leader K. Greenway, solved the problem of flying in twilight after being caught in five hours of twilight in 1946. He set to work to invent an instrument that would indicate when an aircraft is about to run into twilight and how long it would last. "A directional gyro is O.K." he argued, "but it isn't always too accurate—you can't rely on it for long periods without checking. No! We need a supporting instrument." The twilight computer was the result—and it won Squadron Leader Greenway the Thurmay Award. This is an annual award by the U.S. Government for outstanding research and development,

The computer is now in general use in Arctic aviation. It is a sort of navigational slide-rule, except that it "gives a graphical presentation of the problem instead of a series of figures." In a radio talk in Canada, Squadron Leader Greenway explained that, given one of these instruments, all a navigator has to know is "the direction you are going, the speed of the aircraft and the delineation of the Sun. With this, your computer gives you a picture of the conditions of light and darkness you can expect. Also, if your take-off time is pre-set, you'll at least be prepared for the conditions of twilight you'll run into. You can find out that the Moon, or perhaps Jupiter or Venus will be visible. If not, you'll have to be prepared to fly on gyro alone, but the big value is that the computer information enables you to time your take-off for the most favourable conditions."

Here is the full story of the Grand Arctic Circle Air Route. A completely new aviation network, with all the instruments necessary to make it operate, twist East and West via the North—the Far North.

Stratosphere Suit

By John W. R. Taylor

ALTITUDE has always been the key to success in air combat. In the 1914-18 War, the secret was to attack an enemy from above, "out of the Sun." Ten years ago Fortresses of the U.S.A.A.F. flew at 30,000 ft. in an effort to elude the *Luftwaffe's* Messerschmitts and Focke-Wulfs. Then came jet-propulsion, enabling fighters to climb to 30,000 or 40,000 ft. in four or five minutes, and bombers had to fly higher still. As a result, the big jet atom-bombers of today, like the Vulcan, Victor and Stratofortress are designed to fly up to 60,000 ft., in a purple sky with no horizons, where heavily-loaded fighters wallow in the rarified air.

This is all very well up to a point; but human beings were not built to fly 11 miles above the earth. Our bodies work best under an air pressure of 14.7 lb. per square inch, and even an oxygen mask is no good by itself to a pilot at 47,000 ft. There is insufficient air pressure to enable him to breathe, and the cabin of his aircraft has to be pressurised ("blown up") until the pressure inside it is equivalent to a normal altitude of about 10,000 ft., so that oxygen can be forced into his lungs.

Unfortunately, pressure cabins have their limitations. In wartime, an enemy bullet or mechanical failure might cause a sudden deflation. This would be highly

dangerous at 47,000 ft. Above 63,000 ft. it would be disastrous, because the pilot's body fluids would boil in the near vacuum,

and he would survive only a few seconds even when breathing pure oxygen. So the Aero Medical people had to do some hard thinking, and one result is the U.S.A.F.'s new high-altitude pressure suit type T.1, which is guaranteed to make any pilot look like a creature from another planet.

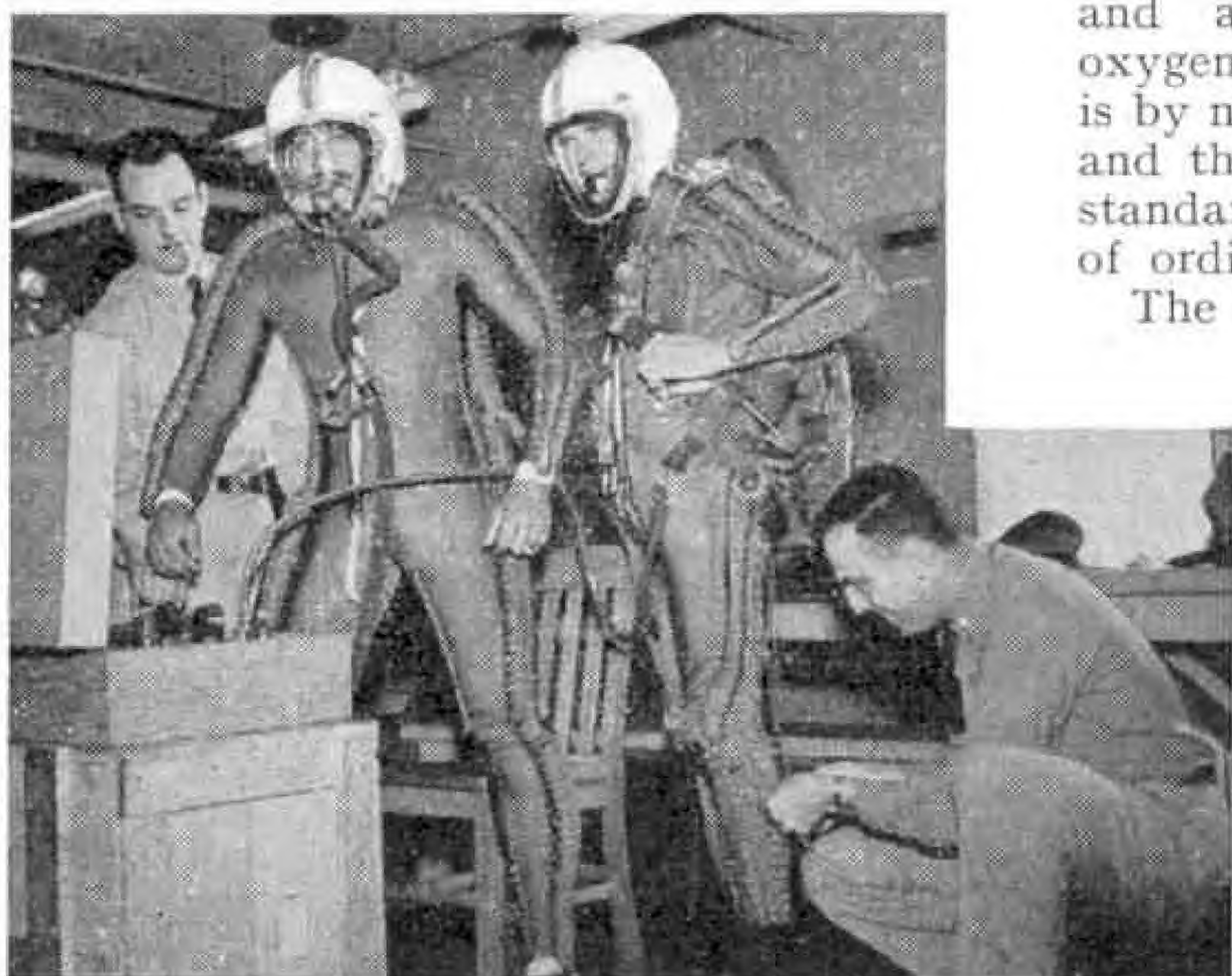
The suit consists basically of a skin-tight green cloth coverall, edged with "capstan tubes" which fill automatically with compressed oxygen the instant cabin pressure begins to drop, tightening the suit around the arms, legs, chest and stomach of the wearer. At the same time high-pressure oxygen is fed into the special helmet, which consists of a rubber inner helmet fitting closely round the pilot's face and neck, a domed outer helmet made in two halves, and a transparent facepiece carrying oxygen tube and microphones. The result is by no means as cumbersome as it looks, and the whole thing can be worn with a standard parachute pack or under a pair of ordinary flying overalls.

The T.1 suit is not experimental, but is already being used every day by U.S.A.F. aircrews and civilian test pilots whose job is to fly aircraft at extreme heights. So far, fortunately, the suits have not had to be used in an emergency; but the men who wear them know exactly what it would feel like if a cabin deflation did occur, because the suits are checked for correct functioning before every flight.

"The inflated suit squeezes you all over," commented one pilot. "But it's not really what you'd call uncomfortable."



The helmet of the new U.S.A.F. high-altitude emergency pressure suit.



Boeing test pilots donning the new pressure suits prior to taking a B-52 Stratofortress aloft. Photographs by courtesy of Boeing Airplane Company, U.S.A.

Railway Notes

By R. A. H. Weight

Improvement Schemes and New Developments

British Railways have announced three important constructional schemes of considerable magnitude costing nearly £4 million, to be commenced shortly. To link up with the widening and reconstruction at and near Potters Bar station already authorised, two additional tracks are to be provided along the two miles of the East Coast main line southward towards New Barnet and King's Cross on the Middlesex-Hertfordshire borders. Plans include three new tunnels, reconstruction of Hadley Wood and Potters Bar stations, extension of colour light signalling and track circuit installations. Some 300 to 350 trains including famous expresses, local passenger, fast and slow freight, have now to use the sole two tracks daily over a stretch of nearly three miles. This has for many years at times been a source of unavoidable delay. Continuous four-track layout through the busy outer suburban area will greatly facilitate traffic handling and enable more residential services to be provided.

One of the largest and most famous main line passenger locomotive sheds, located close to the important junctions at Crewe North, is to be modernised and partly rebuilt, to provide more space and accommodation. A 200-ton capacity coaling plant, ash-clearing gear, 70-ft. turntable and sand drier have already been provided. Repair shops, new round-house sheds with 70-ft. turntables, with other equipment of the latest type, will be put in hand partly on a fresh site. The new round-houses will provide ample space for 58 locomotives to be berthed at once in each.

I recently visited this interesting depot with a party, seeing quite an array of Pacifics, Royal Scots, Jubilees, class 5 4-6-0s with Caprotti gear and otherwise, one Britannia 4-6-2 back from trials, Patriots and compound 4-4-0s. There were a few former L.N.W.R. 0-8-0s about and one Webb tank engine shunting in the yard opposite, but gone are the once numerous express and main line passenger locomotives belonging to that great company which established Crewe as such a complete railway centre.

In north-east England, near the Yorkshire-County Durham boundary at Thornaby, a new motive power depot on a large and up-to-date scale is to be built to replace the old sheds at Middlesbrough and Newport, catering for the large number of locomotives needed to cope with heavy additional traffic arising from the expansion of the iron, steel and chemical industries on Tees-side, N.E.R. The new depot will have two round-houses, each with a 70-ft. turntable and machine shops. Large coaling plants will be provided, together with ash and inspection pits, office, stores and canteen buildings of the most modern design.

Southern Tidings

Well ahead of schedule, and considerably sooner than had been feared might be the case when the flood damage was first surveyed and tackled at the beginning

of February, the S.R. Kent Coast main line to Margate and Ramsgate was reopened on 21st May. Work had continued night and day on the building of a chalk wall as defence from the sea east of Herne Bay, as well as on the reconstruction of the railway embankment. Hundreds of special trains conveying chalk from the London and Ramsgate directions, as well as ballast trains, were run to the site as a matter of special priority, locomotives used including King Arthurs, Moguls, and Q1 and other 0-6-0s.

A few days before normal running was resumed I travelled in each direction between Faversham and Ramsgate, traversing the emergency spur line connecting the Faversham-Canterbury-Dover and Ashford-Canterbury (West)-Ramsgate routes, on the outskirts of Canterbury, which was specially connected as already announced. A very smart unchecked run without stop on the outward journey by Schools 4-4-0 *Bradfield* over this unusual course gained a good deal of time. A Battle of Britain 4-6-2 in the opposite direction, which is harder, suffered a signal stop and several slacks, so was a little late at Faversham (on the way to Victoria) where the working was proceeding smoothly. Passengers for Whitstable or Herne Bay changed into quite lengthy special push-and-pull trains with Drummond or Wainwright 0-4-4Ts in the middle.

A slow Chatham-Dover train formed of eight corridor coaches was hauled by a class 4 2-6-4T,



The up "Royal Scot," normally a Pacific turn of duty, is here being hauled by 4-6-0 No. 45525 Colwyn Bay. Photograph by W. S. Garth.

connecting with the 4.45 p.m. Cannon Street-Ramsgate-Birchington headed by a King Arthur. The following business express, 5.15 from Cannon Street, appeared to have had a very good non-stop run from London in charge of the light Pacific *Tangmere*, which was soon off again to Ramsgate over the temporary route. Meanwhile L1 No. 31783 had arrived from London.

No. 34085, 501 *Squadron*, had lost its off-side nameplate, going up with the early evening express to Victoria including two Pullman cars in its formation, calling at Faversham then to make connection with the Herne Bay shuttle service. Normally it runs without stop from Whitstable, and in summer becomes the *Kentish Belle*. Rebuilt Wainwright 4-4-0s of classes D1 and E1 were a good deal in evidence on the Chatham and Ashford lines that day.

When a number of the Merchant Navy Pacifics were withdrawn from service temporarily for examination in May last, replacement loaned engines on S.R. duties included Britannia 4-6-2s from the Western and L.M. Regions, V2 2-6-2s and B1 4-6-0s from the E.R. and L.M.R. class 5 4-6-0s.

A special train carrying a Stephenson Locomotive Society party on a round trip special excursion on 3rd May was hauled from London to Portsmouth by way of Crystal Palace, Dorking and Chichester by L.B.S.C. Atlantic *Trevose Head*, which suffered a good many checks and delays with a nine-coach train,

including cafeteria car. This was brought back to London in splendid style reminiscent of 40 years ago by T9 4-4-0 No. 30718, via Guildford, Wimbledon and East Putney to Waterloo. In Hampshire a push-and-pull special with M7 0-4-4T No. 30110 in the middle ran from Gosport to Fareham, Botley, Bishops Waltham, Cosham and Havant, including lines little used for passengers. All the engines concerned were very smartly turned out.



A rural railway scene showing a Cambridge-Colchester train in Chappel cutting, hauled by veteran Great Eastern 2-4-0 mixed traffic locomotive No. 62795. Photograph by G. R. Mortimer.

About that time another Atlantic, No. 32421 *South Foreland*, was working from Fratton shed to Salisbury and Yeovil, and more of the 76005 series of class 4 2-6-0s were appearing on Western Division duties from Eastleigh. In connection with troop or other special train haulage in one direction, light Pacifics have been used for certain week-end ordinary trains between London and Tunbridge Wells West.

Locomotive News Items

No. 46151 *The Royal Horse Guardsman* is now a converted Scot with new boiler. Ten "84000" class 2 2-6-2Ts are in hand at Crewe. It is understood that 2-10-0s of the new design authorised will be built at Crewe and Swindon. New class 4 2-6-4Ts built at Brighton have been allocated to the Midland Division as follows: No. 80059, 14B, Kentish Town, Nos. 80061-2, 15D, Bedford. Diesel electric 0-6-0 shunters from Derby Works numbered 13017-9 are allocated to 1A, Willesden, and No. 13020 to 3D, Aston, Birmingham.

Light 2-6-0s of class 2 L.M.R. design constructed at Swindon and numbered 46522-7 have been placed in service, also Nos. 78006-9 built at Darlington. Though largely used on former Cambrian lines, some are allocated elsewhere, such as No. 46525 to 82B, Bristol, S.P.M.

Western Region locomotives stationed at Birkenhead, 6C, including four Granges, have as a book transaction been

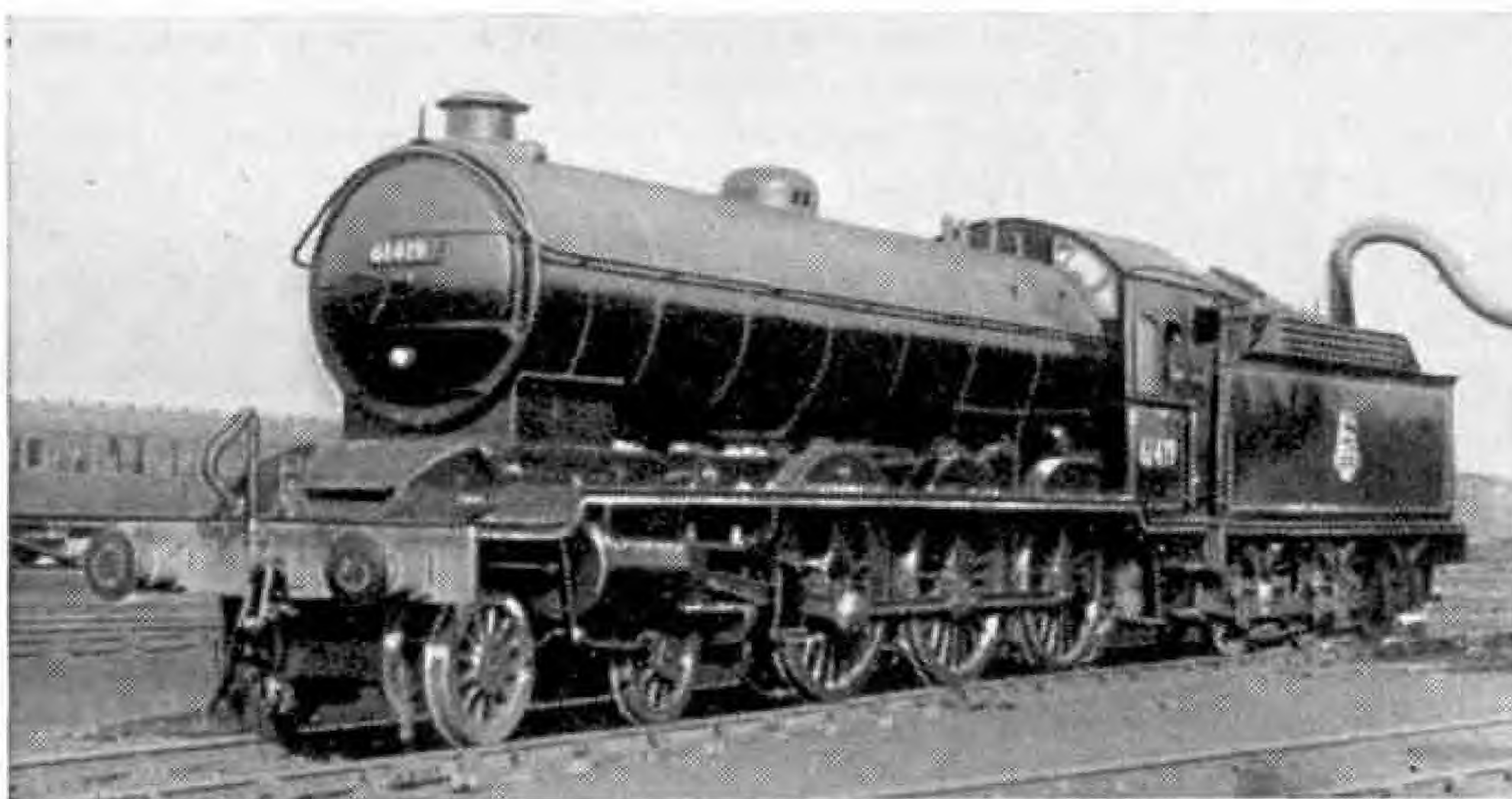
transferred to L.M.R., while the L.M.R. engines at Shrewsbury, 84G, Hereford, 85C, Abergavenny, 86K and Swansea, Victoria, 87K have similarly gone over to the Western Region. More ex-L.N.E.R. A3 Pacifics of the earlier rebuilt series have been converted to left-hand drive as now standard.

Speedy Express Train Running

On account of the frequency of the mile-a-minute or quicker timings, and of the exceedingly speedy actual runs so often experienced, the 44 miles between York and Darlington which are part of the East Coast main line from Kings Cross to Scotland surely constitutes Britain's fastest stretch of track, at any rate as regards start to stop schedules of a comparatively short character. In the southbound direction from Darlington, which is slightly easier though largely level or nearly so, the quickest booking allows only 42 min., averaging 63 m.p.h.

A3 No. 60070 *Gladiator*, with 10 coaches weighing about 330 tons on the Birmingham express, was at rest at the south end of York, signal check included, in 39½ min. having travelled at 80-86 m.p.h. for 18 miles. A4 *Sir Murrough Wilson*, with eight coaches, the day before made a tremendously fast exit from Darlington such as I experienced and reported last autumn in the *Tees-Tyne Pullman*, securing another average of over 67 m.p.h. overall. With 13 on, 435 tons, A1 4-6-2 *Aberdonian* on the rather more liberally timed *Northumbrian* and running fairly easily, was in York after slight signal check in 42½ min. With 35 tons more northbound the same engine covered the 44 miles in just over 45 min. These recent runs were logged by Mr. Norman Harvey.

I was on board the *Merseyside Express* non-stop from Liverpool to London, Euston, on a busy day last April when 4-6-2 *Princess Helena Victoria* had a 15-coach load weighing over 500 tons full. Owing to many slowings due to track repairs or other engineering work timekeeping was almost impossible, so we arrived 8 min. late.



The neat and simple outline characteristic of former North Eastern locomotives is well shown in this photograph of No. 61419, a Raven three-cylinder mixed traffic locomotive of Class B16. Photograph by C. Ord.

The Young Farmers' Clubs

By R. Tenent

IF you are a lover of the countryside, and keen to take an active part in rural life, then I would like to introduce you to the Young Farmers' Clubs. Through these clubs thousands of boys and girls all over Britain are engaged in interesting jobs such as helping farmers with the harvest, growing vegetables and flowers, and keeping poultry, bees, or goats. They also learn such useful accomplishments as the right way to handle a farm horse and to use a tractor.

The idea of Young Farmers' Clubs originated in Canada and the first one of its type in England was formed at Hemyock, Devon, in 1921. Great interest was aroused from the start, and three years later there were thirty clubs in existence in different parts of the country.

Qualification for membership was a genuine love of animals, birds and plants, and a willingness to be entirely responsible for something that lives and grows. As far as possible the clubs were run by the members themselves, who were guided in their work by an adult club leader, experienced in rearing stock and other country matters.

Today the National Federation of Young Farmers' Clubs, with headquarters in London, has a membership of more than 60,000 young people aged between 10 and 25 years. Members come from every walk of life and all interests are catered for. There are clubs in villages, market towns, industrial cities and in schools. There is outdoor work and indoor work, with practical jobs and recreational activities.

Outdoor work consists of ploughing, weeding, sowing, fertilizing, the breeding and rearing of animals, judging stock, handling dogs, sheep and cattle, thatching, hurdle-making and so on. Indoor occupations include homecrafts such as fruit preservation, basket making, carpentry, care of tools, leatherwork, rug making and weaving. For recreation there are cycling and walking tours, cricket,

football, and other sports, treasure hunts, parties, socials, musical events, masques, plays, pageants, spelling bees and debates.

Let us take a typical club evening. A meeting takes place, say, once a week or fortnight. When normal business matters have been discussed perhaps there will be a talk or demonstration from a visiting speaker. After this may follow a discussion and, finally, chatting between friends who may not have seen each other since the last meeting. During the summer such a gathering may take place outdoors.



Sheep shearing at the 1950 Royal Show, held at Oxford.

Perhaps a visit is paid to a farm and the party is shown round by the farmer.

The results of such farm visits are interesting. For example, a club might decide to adopt the farm. When this happens, members, singly or in groups, visit it frequently throughout the year, note progress and keep careful records. In this way a club acquires much useful information on the geographical and historical associations of the farm, as well as its relation to the community it serves. In return for such opportunities provided by the farmer, the club might arrange for some of its members to give him seasonal help.

In some clubs a list of questions is sent to each member, and the answers are used as guides for future programmes. Each might be asked to choose from a list the



Horse handling competition in progress at the Royal Show of 1950.

five things he would most like to learn about, or the three places he would most like to visit. Out of every six meetings he might be asked to give an opinion on how many should be held outdoors. Clubs may vary slightly according to age-groups but all have the same ideals, to give young people a wide and useful knowledge of rural life and to make them good citizens.

Take the St. Helena Young Farmers' Club, which is now in its second year and has a membership of boys between twelve and fifteen years old. Mr. R. Chester, the Club Leader, reports that calves under the boys' care graze in the paddocks, and good crops of cabbage and cauliflower have been raised and sold. Plans for the future include poultry keeping and pig breeding. Regarding indoor and social activities, Mr. Chester says: "In the Club House we have made a reading room, collecting books and magazines on many topics. . . . There is table tennis as well. The Club House is open twice a week in the evenings for social gatherings and sometimes for a film show. We run a small canteen for members."

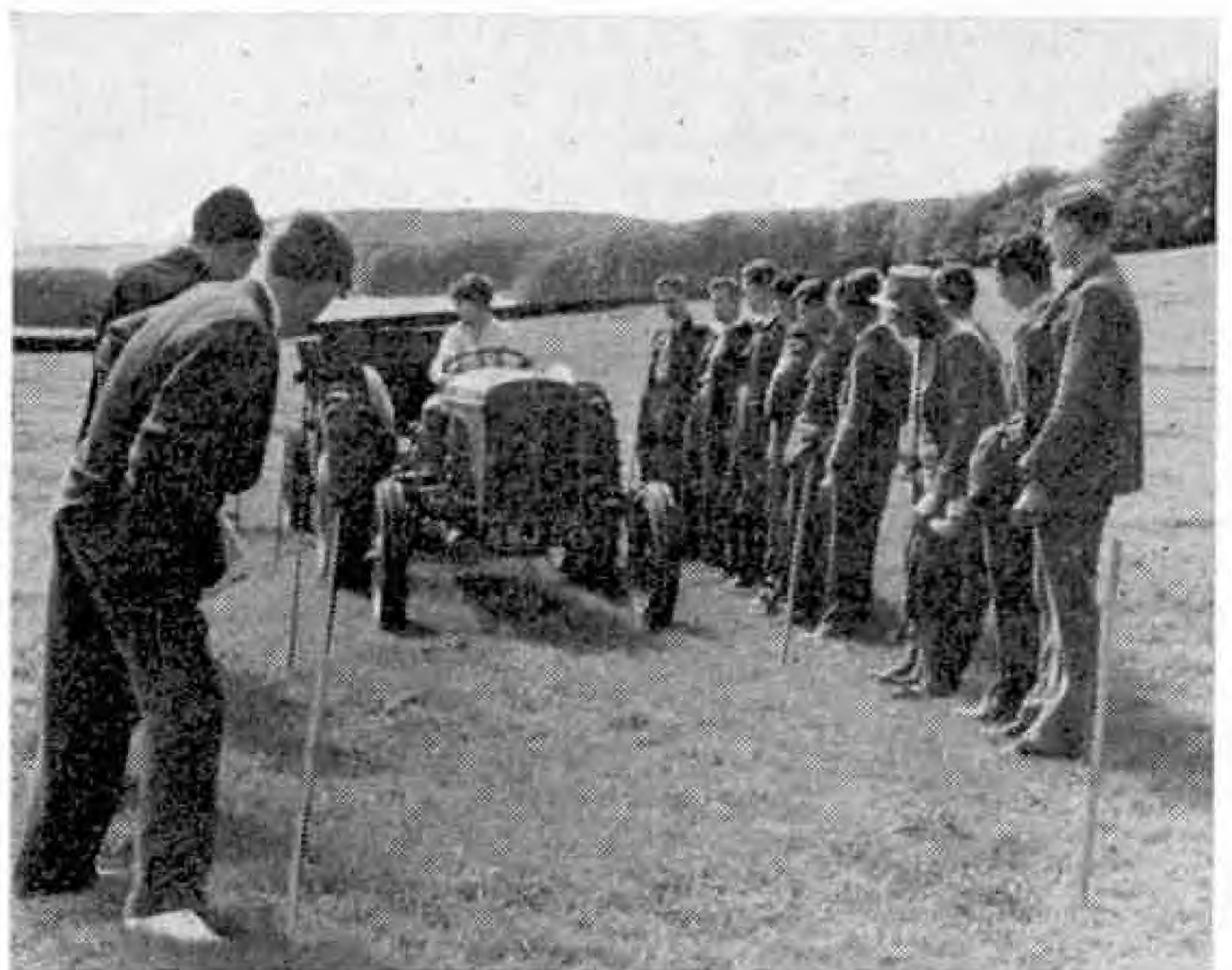
A very important part of Young Farmers' Club activities is group work. This gives every member a welcome job so that they all feel that they are needed. A typical example of such enterprise concerns a school club. The boys managed to get the use of a ten-rod allotment that had been left uncultivated for two years. They cleaned the

land as well as possible and then planted it with nine different kinds of potatoes. The planting was done in May and the crop was lifted in September. The proceeds of the sale of the crop were paid into the school gardening account.

Another club, taking advantage of the long winter evenings, constructed a model of the leader's 150 acre farm. About half the members of the club took part and they completed the model in three weeks, working two evenings a week; a total of 13½ hours. Materials used to represent the vegetable crops and the hedges included gooseberry tops, coloured raffia, and lichen

scraped off roofs and trees. A layer of plasticine was spread over the surface of the fields so that the larger plants could be properly set.

A third club, this time of about thirty members, produced, acted, dressed and staged four plays, all without professional help. Each production took about three months to complete. As soon as the play was cast, there were rehearsals twice a week in the homes of members, the stage being used for the dress rehearsals. Scenery, costumes and properties were made, begged and borrowed. Posters were painted by non-acting members, who also prepared and ordered (Continued on page 380)



At a meeting of the Bakewell Club, Derbyshire, very young members compete in reversing a tractor and two-wheeled trailer down a marked way. British Official photograph.



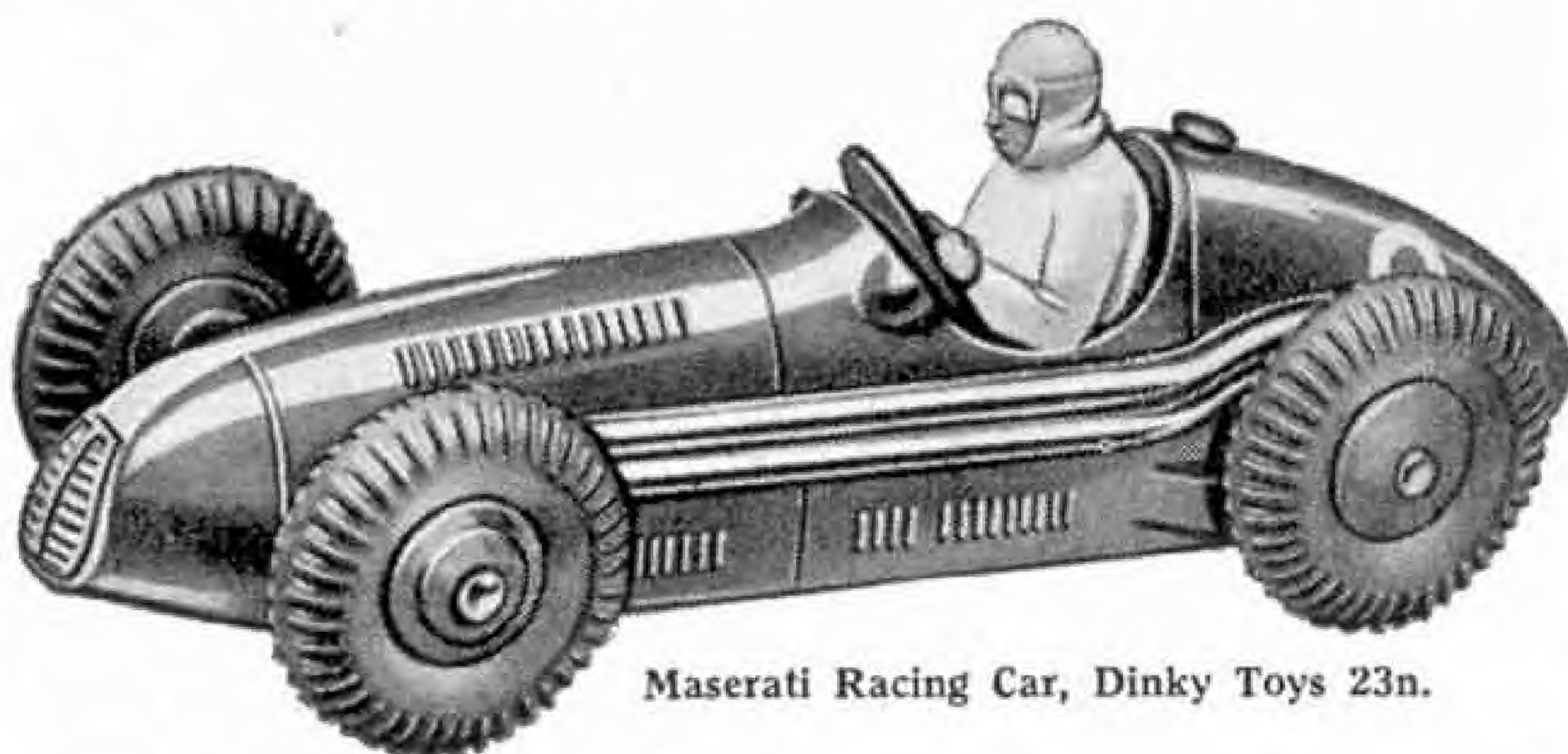
More about the latest **DINKY TOYS**

NEW Dinky Toys were truly on road and track last month, for the newcomers were the Maserati Racing Car and the Somerset, one of the series of cars produced by the Austin Motors Ltd. They are illustrated for readers of the Magazine on this page, and they certainly have a snappy and life-like appearance.

The addition of the Maserati to the growing list of Dinky Toys racing cars will be a particularly welcome development to all Dinky Toys enthusiasts, particularly those who take a special interest in motor racing. It can be recognised at a glance by the characteristic nose and grille, finely reproduced in the Dinky Toys production, and other details also are well reproduced in the miniature.

The real Maserati is a sleek car, the very shape and appearance of which immediately suggest speed and power, and the Dinky Toys Maserati has the same characteristics.

The Austin Somerset is a delightful production, recognisable at a glance because of the manner in which it reproduces the well-known outlines of its original. There is very little need for me to say anything about it. If you just look at it in the shops, or on your own Dinky Toys layout if you



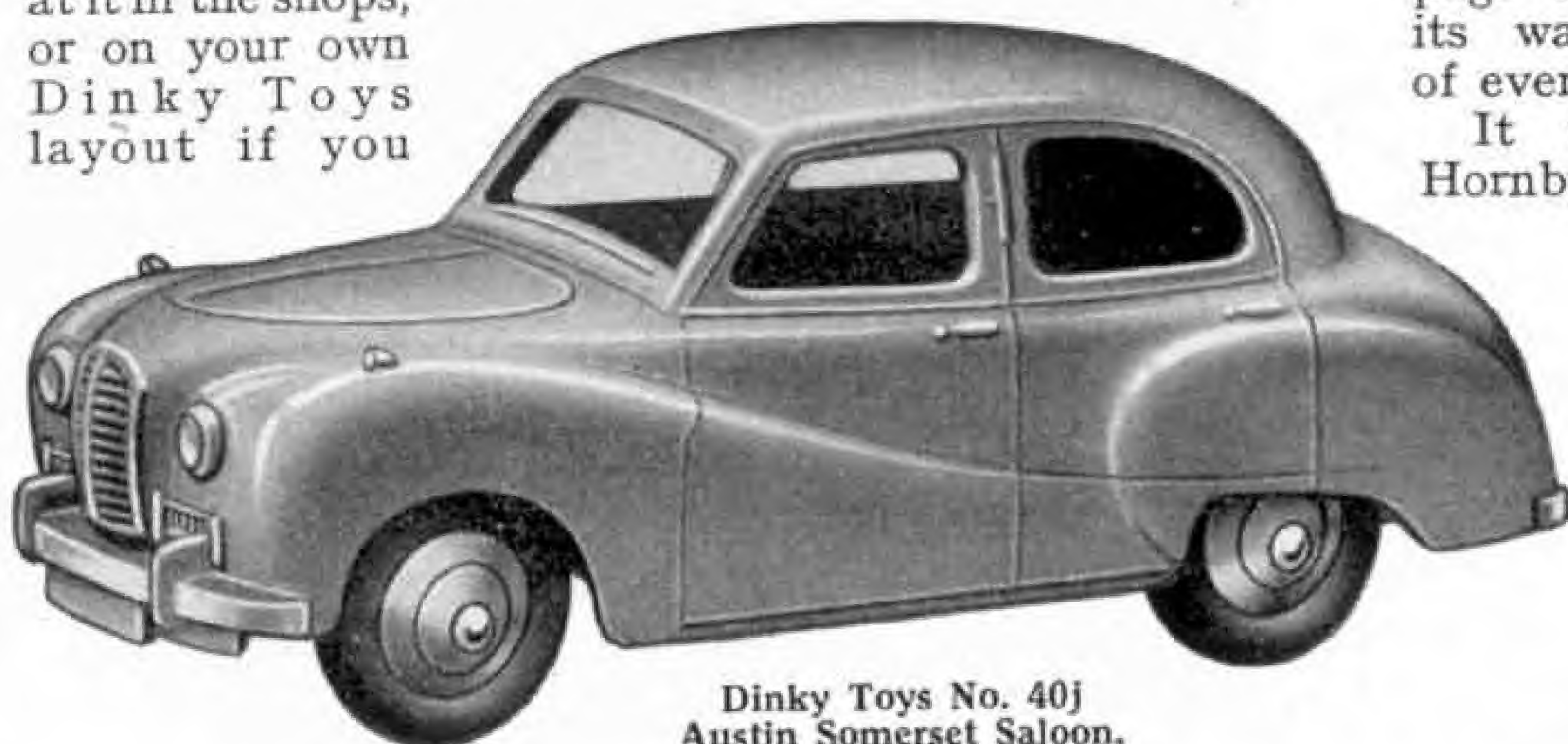
Maserati Racing Car, Dinky Toys 23n.

already possess it, you will realise that it is a joy to handle and an example that every enthusiast must possess, whether it is in bright red or in light blue, the two colours available.

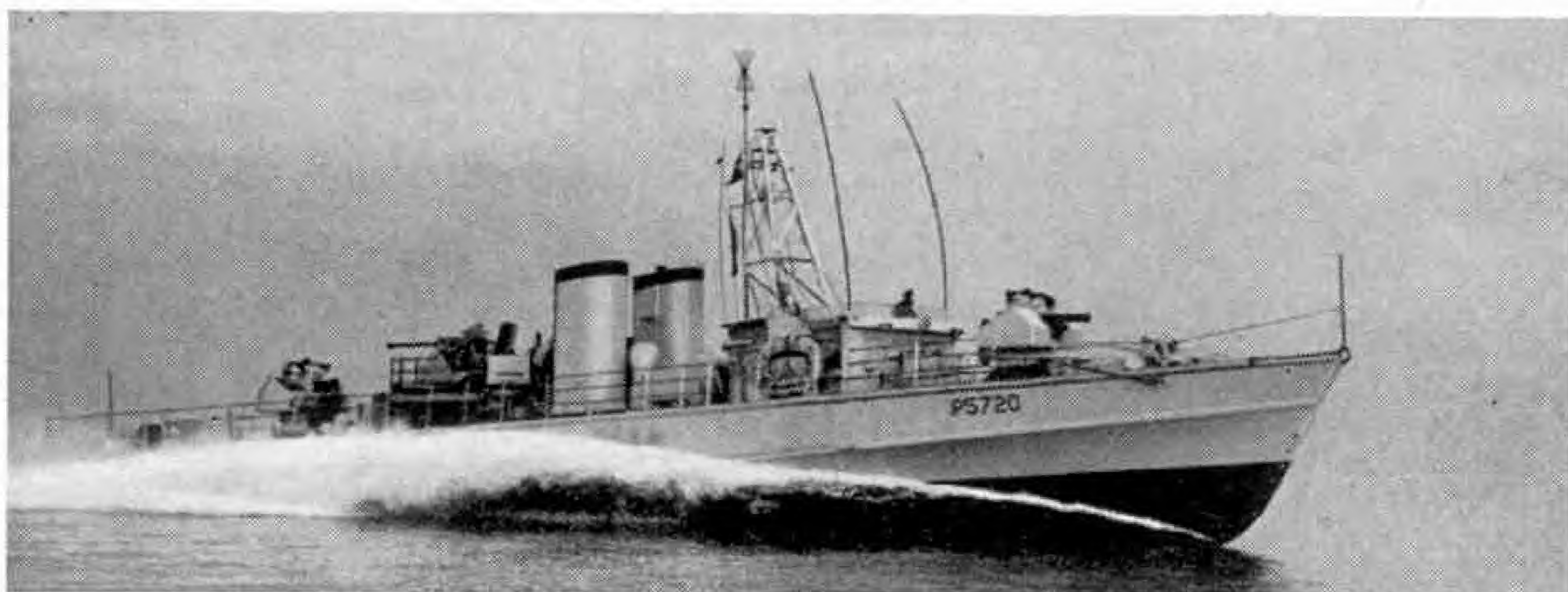
Two months ago I told you that the Foden 14-ton Tanker had appeared in a new finish, with the name *Mobilgas* on its sides, and I reproduced an illustration of this model. Now comes another Dinky Toy in a new finish, this time the Guy Van, which is available in cream and red, with the wording *Spratt's Bonio, Ovals and Dog Cakes* on the side, surmounted by a reproduction of the well-known Spratt's dog. This is a really attractive model, as a glance at the illustration of it on page i will show. There is also a re-introduction to add to the list, the Mechanical Horse with Detachable Trailer, a miniature of a type of vehicle widely used by British Railways. This too is illustrated on

page i, and it should find its way on to the roads of every Dinky Toys layout.

It will appeal also to Hornby-Dublo and Hornby Gauge 0 enthusiasts, especially to those who favour goods train operations. Several of these handy vehicles can be employed in transporting freight to and from the goods depot adjoining station or siding.



Dinky Toys No. 40j
Austin Somerset Saloon.



H.M. M.T.B. Bold Pathfinder, one of two experimental gas turbine vessels of the Royal Navy. The illustrations on this page are reproduced by courtesy of Vosper Ltd., Portsmouth.

Shipping Notes

ONE of the most interesting of recent Naval developments is the introduction of motor torpedo boats designed for gas turbine propulsion. Two of these experimental vessels have been built. One of them, named *Bold Pathfinder*, is illustrated at the head of the page. The other is the *Bold Pioneer*. They are not identical, but are described by the Admiralty as sister ships. Both are fitted with gas turbines made by Metropolitan Vickers Electrical Company Limited, Manchester, the main machinery installation having been undertaken by the shipbuilders, Vosper Limited, Portsmouth. The gas turbines have been developed from the Gatric engine, which was successful when it was installed in the motor gun boat 5559, which was built in 1947.

The *Bold Pathfinder* has an overall length of 122 ft. 8 in. and a length between perpendiculars of 117 ft. Her beam is 20 ft. 5 in. and she has a maximum draught of 6 ft. 7 in. An interesting feature is that she has twin funnels that are of almost square section.

Each of these experimental vessels is armed with four 21 in.

Gay Bombardier, one of the Gay class fast patrol boats, fitted as a Motor Gunboat.

torpedo tubes and one small gun, and carries a peacetime complement of two officers and sixteen ratings. They are known as convertibles, and can serve either as motor torpedo boats or as motor gunboats. They are very fast indeed, but no details of their actual speed have been revealed.

The picture at the foot of the page shows Her Majesty's Motor Torpedo Boat *Gay Bombardier*, which is described as the first of the Gay class of fast patrol boats, the only other member at present having the name *Gay Archer*. These vessels were designed by the Admiralty. They can be armed either as gunboats or torpedo boats. As gunboats they will mount a 4.5 inch gun and one smaller gun, while as torpedo boats they will be armed with two 21 inch torpedo tubes and one small gun.

The two vessels were launched at the Portsmouth yards of Vosper Limited in August last year. They are 75 ft. in length, with a beam of 20 ft. They are almost entirely built of wood, and are driven by Packard engines.



Meccano for the Blind

Work at a Famous Training Centre

NEWLY-blind adults under 50 are sent for training to the National Institute for the Blind's Rehabilitation Centre in Torquay to help them readjust themselves to blindness, regain self-confidence, and do things with their hands without guiding sight. During the course their abilities are assessed and

A special department has been equipped at the Torquay Centre for the purpose of training and assessing blind people for such employment. For this purpose a variety of assembly jobs has been devised, ranging from comparatively simple to more advanced and intricate operations.

Meccano has been found to be the best medium for the main part of this work. The wide and varied range of components provides ideal material for training the sense of touch and developing deft fingers. With Meccano twelve models have been made, beginning with a very simple arrangement of four Strips making a square and becoming progressively more difficult.

For each model a set time for its assembly has been worked out. The trainee is given the model to examine carefully and then is asked to copy it exactly. The component parts are kept in separate compartments in racks immediately to hand in front of those working on the bench, and the instructor watches to see the method of approach. The first model with its four Strips and necessary number of nuts and bolts is simple enough. The correct approach is to take four Strips from the appropriate compartment and the same number of nuts and bolts to match. In other words, the assembler should get the required materials on the bench beside him before starting and so save unnecessary time groping for the parts required.

With the variety of components offered by Meccano it is easy to see what good practice is derived for exploring fingers. The holes can easily be felt and they have to be counted to ensure symmetry and correct positioning of parts. With the more difficult models the fingers often have to work in very confined spaces, and a good deal of care and practice is required to ensure that the work is done quickly and accurately.

If a trainee assembles a model, but takes more than the standard time, he is given it to do again. He repeats this process until he has satisfied the instructor that he can make the assembly within the time limit. Many people are slow and awkward



A schoolboy at the Worcester College for the Blind building a Meccano model. There is a flourishing Meccano Club at the School.

recommendations are made for their future training and employment.

Today many blind people are employed in open industry, that is to say working in factories alongside sighted people, performing suitably chosen operations that can be done without sight. In order to ensure that the employment of blind labour is economically sound, suitable work within the capacity of blind people is chosen—and Meccano can assist to make a good start. The trained blind person should possess the degree of manual dexterity enabling him or her to attain the necessary standard of efficiency.



A trained blind operator machining rivets for portable saw chains on a Herbert No. 0 capstan lathe.

at first. They drop the nuts, bolts and washers, but quickly learn the best way of holding the models and building in methodical stages. An advanced Meccano model often takes longer to construct than allowed for; the instructor observes the process of assembly and by so doing detects those flaws in the plan of the builder that tend to slow down completion when the more difficult part is reached. He therefore instructs the trainee in method so as to underline the importance of technique.

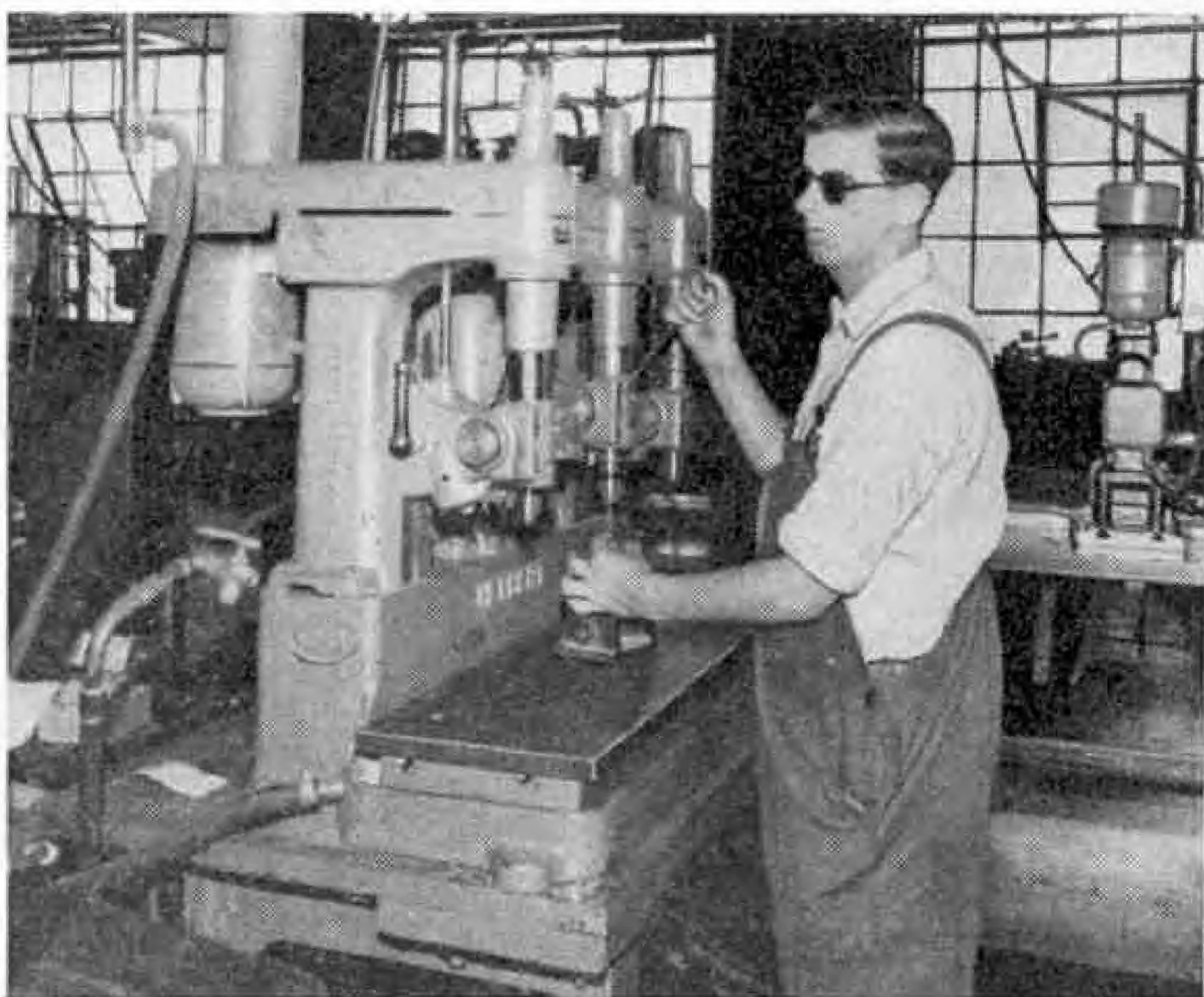
As the more difficult models are approached the trainee is allowed to examine them very carefully and copy them at leisure in order to ensure absolute accuracy in design. The head of every bolt must be facing outwards, though it would often be easier for the fingers if it could be done in reverse. Finger work when space is limited calls for patience and ingenuity as well as muscular co-ordination and certainty of fingers. Here again, when the trainee has

assembled the model correctly and understands the building and construction, he dismantles it and builds it again; the process is then repeated until the building can be done within the time limit.

It is of course only fair to say that some trainees of the older age groups suffer from diminution of tactile sense; others lack the natural dexterity of hands. These people find it difficult to attain the standard required, some fail to do so and others only succeed after prolonged and repeated practice.

It may be thought that such assembly of Meccano as described above would be tedious and uninteresting to adults. This has not been the experience of those at the Rehabilitation Centre; on the contrary nearly all the men and women at work find it absorbing and interesting. The department can take eight persons at a time and they sit on the sides of a long bench with racks down the centre. In other departments of the Centre, where group handicrafts are done, there is always a good deal of chatter and gay banter. It is significant that in the assembly department all are far too busy and preoccupied, concentrating on the job in hand, so that silence prevails, broken only by the clicking of the Meccano parts. A competitive spirit prevails in a painstaking atmosphere—a great tribute to Meccano when used for the purpose of aiding the blind.

Meccano now has a definite use and niche for helping the hands of blinded persons at the famous Homes of Recovery of the National Institute for the Blind.



Another Meccano trained blind operator at work jig drilling.



Short S.B.5 experimental aircraft is here seen using a triple parachute landing brake. Photograph by courtesy of Short Brothers and Harland Ltd.

Air News

By John W. R. Taylor

British Turbojet Achievement

Two items of news recently spotlighted the continued progress being made in British jet development.

Most significant, perhaps, was the splendid new International Height Record of 63,668 ft. set up on 4th May by a Canberra bomber fitted experimentally with two Bristol Olympus turbojets. It gives an indication of the great heights at which the new Olympus-powered Avro Vulcan delta atom-bomber will be able to fly—far above the operating heights of present-day fighters.

Shortly before this Rolls-Royce had announced that three Canberras had been subjected to a period of intensive flying at the R.A.F. stations of Binbrook, Upwood and Hemswell, to see how long their Avon engines could run between overhauls. Of the six engines concerned, two were examined after 400 hrs. almost continuous flying and one at 450 hrs. They were in such excellent condition that the other three were taken on to 600 hrs. flying in a total period of 50 days. Even then, only a few minor replacements were needed to bring the engines up to standard for further flying. It is interesting to note that 600 hrs. represents a distance covered of 300,000 miles between overhauls.

Shatter-Proof Glass

Working to U.S.A.F. requirements, the Lockheed Aircraft Corp. have produced a new type of transparent cockpit hood for military aircraft that will not shatter even when struck by flak or direct gunfire. It is made up of two layers of Plexiglass with a soft vinyl core similar to that used in ordinary safety glass. First use of the new hoods will be on F-94C Starfire all-weather fighters.

Flying Sea Horses

The Chairman of Sydney's Taronga Zoological Park Trust, Sir Edward J. Hallstrom, recently sent 12 Australian sea horses on the Qantas Empire Airways service to South Africa, in exchange for a supply of tropical fish.

The sea horses, which measure between four and nine inches in length, were shipped in a five gallon can rather like a milk churn, and Qantas engineers installed two special electric pumps in the Constellation air liner to deliver a

continuous supply of oxygen to them during the three-day trip. It was not Qantas' first experience of marine passengers, because in 1949 they carried 20,000 brown trout from Sydney to restock Sir Edward's experimental station in New Guinea.

Variable Sweep Research

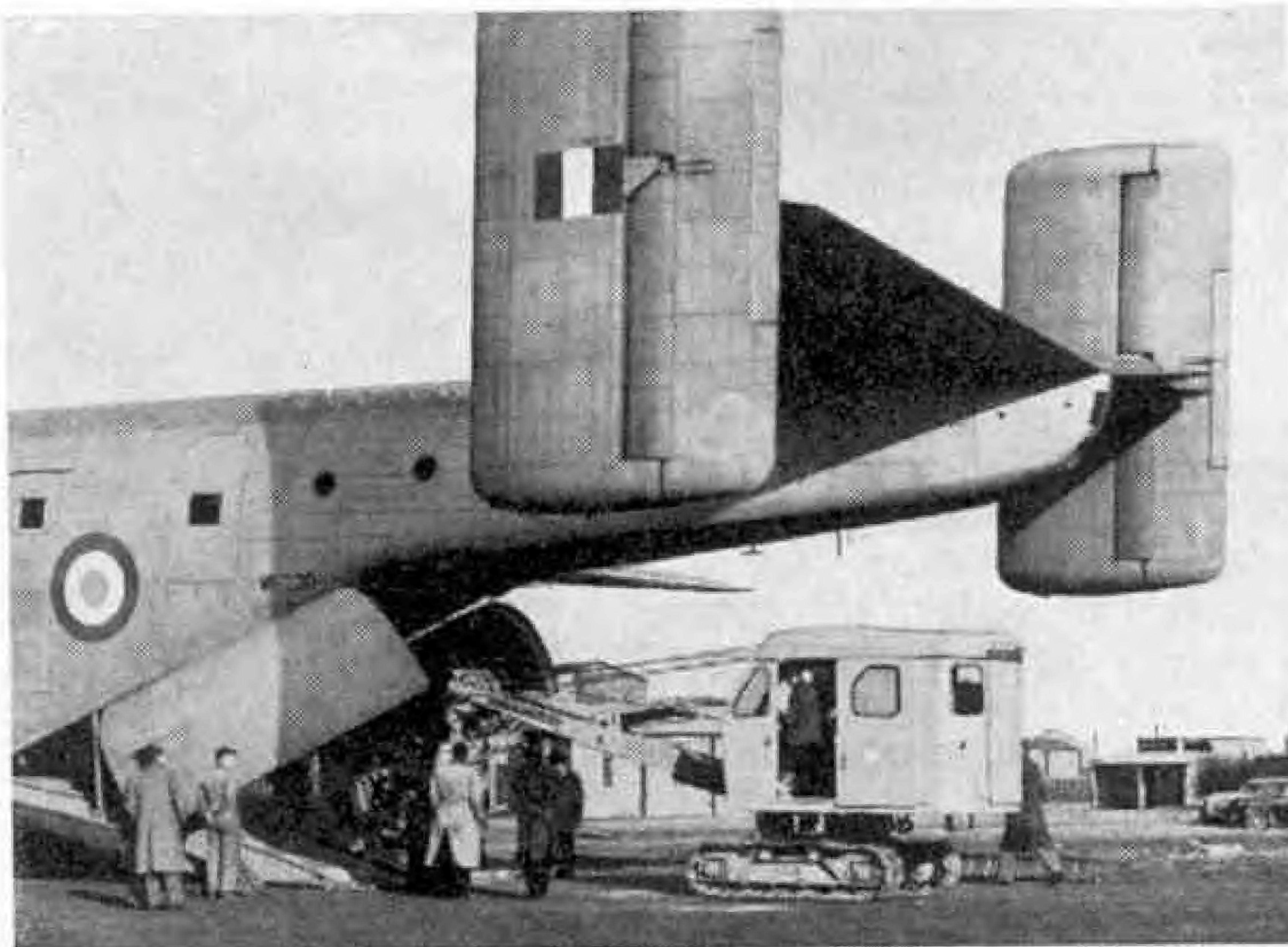
Some time ago I described in *Air News* the Bell X-5 research aircraft, which has variable sweep wings. A British experimental aeroplane on the same lines, the Short S.B.5, is illustrated above.

Unlike its American counterpart, the S.B.5 cannot change the angle of sweepback of its wings in flight; but these can be adjusted on the ground to a maximum sweep of 60 degrees, compared with, for example, 35 degrees on a Sabre.

The machine is a single-seater, with a Derwent engine and a movable tailplane to help eliminate trimming problems. Its undercarriage is fixed, as the S.B.5 is intended only for comparatively low-speed test flying; but American reports say that it was built to obtain research data for a new British supersonic fighter with variable sweep wings of the same basic shape.

* * * * *

The Belgian airline SABENA plan to inaugurate the world's first international helicopter services this year, using three Sikorsky S-55s. The services will centre on Brussels, and the helicopters will be equipped to carry seven passengers over average stage lengths of 95 miles.



Loading an excavator into a Blackburn and General Aircraft Universal Freighter. This is typical of the loads that can be carried in these big transports. Universal Freighters are on order for the Royal Air Force and for Silver City Airways. Photograph by courtesy of Blackburn and General Aircraft Ltd.

New U.S. Trainer

The U.S. Navy's latest advanced training aircraft is the North American T-28B, shown in the upper photograph on this page. Basically it is similar to the U.S.A.F.'s T-28A, but has a more powerful 1,425 h.p. Wright R-1820 engine, which increases its top speed by over 60 m.p.h., to 346 m.p.h. It is, in fact, much faster than many fighters of the last war,



The North American T-28B, the U.S. Navy's new single-engined advanced trainer. Photograph by courtesy of North American Aviation, Inc., U.S.A.

can climb at a rate of 3,850 ft. per min. and is very pleasant to fly. Its tandem cockpits are fitted with complete dual controls, and guns, rockets and bombs can be carried for weapon training.

Australian Helicopter Rescue

One of the Royal Australian Navy's first batch of Bristol Sycamore helicopters started work almost as soon as it reached Sydney aboard the light fleet carrier H.M.A.S. *Vengeance*.

A message received stated that one of the keepers of a lighthouse on the New South Wales coast was thought to have fractured his spine in an accident. All roads to the lighthouse were impassable, so the Sycamore was despatched to pick up the man and bring him back to the naval air station for skilled medical attention.

The Last "Stringbags"

The last airworthy Fairey Swordfish biplane has been retired from active service with the Royal Navy's Torpedo Development Unit and delivered to the Naval Air Station at Lee-on-Solent, from where it will be available for flying displays.

Altogether 2,391 Swordfish were built by Faireys and Blackburns, and they saw service throughout World War II. Affectionately known as "Stringbags" by their pilots, they were used as dive-bombers, strike and anti-submarine aircraft in the Battle of the Atlantic and in protection of Russian convoys. They also pioneered the use of rockets, airborne searchlights, radar and many other secret developments.

They established the effectiveness of carrier-borne strike power in 1940 by crippling the Italian fleet at Taranto. Swordfish aircraft also made the torpedo attack on the German battleship *Bismarck*, which reduced her speed and led ultimately to her destruction.

Jet Streams

Back in 1920, Major R. W. Schroeder took a Le Pere fighter higher than anyone had ever dared fly before.

At 33,000 ft. over Dayton, Ohio, he pointed the 'plane towards the west, only to wind up east of his starting point! Although he did not know it, he had discovered one of the mysterious, phenomenally strong, high-altitude wind streams that have now been christened "jet streams."

Nobody knows the exact cause of these meandering "rivers" of wind, which occur between 20,000 and 40,000 ft.; but we do know *where* they are. As a result, airlines are beginning to fly their aircraft along jet streams, where possible, to take advantage of tailwinds which sometimes measure 300 m.p.h. Pan American

Airways' Stratocruisers have, in this way, lopped 7 hrs. off their normal 18-hr. Tokyo-Honolulu run, and a U.S.A.F. Boeing Stratojet recently rode a jet stream, between Albuquerque and Wichita, which was so strong that the aircraft maintained a ground speed of 794 m.p.h. for 30 minutes.

U.S. Turboprop Transport

The U.S.A.F. have placed a big production order for the Lockheed C-130, shown in model form in the lower illustration on this page, before the prototype has been completed, although it is the first American transport aircraft designed from the start with turboprops.

The C-130 will be a large aeroplane, with a wing span of 132 ft. and a length of 95 ft., powered by four 2,763 h.p. Allison T-38 turboprops. Chief duties will be assault and supply missions, carrying troops and stores into combat areas and evacuating casualties. Its tail will be sharply upswept, the bottom panel hinging down to form a loading ramp, up which vehicles can be driven into its cargo-hold. It will be possible to lower this ramp in flight for parachuting troops and supplies into areas where a landing cannot be made; but the C-130's special tandem-wheel undercarriage will enable it to operate from small, rough airfields in forward areas.

Scale model of America's first turboprop freighter, the Lockheed C-130, described on this page. Photograph by courtesy of the Lockheed Aircraft Corp., U.S.A.



The Brighton "I 3" Tanks

THE breaking up some months ago of the last Southern express 4-4-2 tank, No. 32091, removed from the locomotive scene a class that was notable in various ways. The former London, Brighton and South Coast Railway had several classes of 4-4-2 tanks, but none of them was nearly so successful in its sphere as the large-wheeled "I 3" class became in express train working.

The first of the Brighton "I 3" engines, No. 21, came out in 1907 during the locomotive chieftaincy of Douglas Earle Marsh. It had driving wheels 6 ft. 9 in.

in diameter, cylinders 19 in. by 26 in. and, like practically all other engines of the time, used saturated steam. But the next five engines, Nos. 22-26, with 6 ft. 7½ in. wheels and 21 in. cylinders, were provided with superheaters. They were among the earliest engines so equipped to run in this country and their performance, especially the running of No. 23 between Brighton and Rugby in friendly competition with an L.N.W.R. 4-4-0 tender engine, demonstrated in a striking manner the advantages of the superheater and more than that of any other locomotive class led to the general adoption of superheating on our railways.

These test runs were made during 1909 on the *Sunny South Express*, so called because it provided a through service via Willesden and the West London line, between Lancashire, the Midlands and the South Coast resorts of Brighton and Eastbourne. After some preliminary runs by Nos. 23 and 26, a special series of comparative trains involving an L.N.W.R. engine as well was arranged. As the test engines worked right through between Rugby and Brighton, each thus covered a portion of the other's system. The work included the running non-stop of the train, then weighing about 250 tons full, at an average of round about 53 m.p.h. over the 77.2 miles between Willesden and Rugby.

Although No. 23 was of more modest proportions than the L.N.W.R. engine, No. 7 *Titan*, a 4-4-0 of the "Precursor" class then not superheated, the results were heavily in its favour. No. 23 managed successfully on a single heaped-up bunkerful of coal for the double trip of 264 miles out and home. Although the capacity of its tanks was only 2,110 gallons No. 23 proved able to run from East Croydon to Rugby, 90½ miles, without taking water, whereas *Titan*, thirsty after the manner of her kind, used to fill up at Willesden.



L.B.S.C.R. No. 23, the hero of the 1909 locomotive exchange with the L.N.W.R., is shown here with a Pullman train at Epsom Downs on what was evidently a special occasion in the palmy days of the class. Photograph by courtesy of the Pullman Car Company Ltd.

The running of No. 23 so impressed the Crewe authorities that in 1910 a superheated modification of the "Precursor" design was introduced. This was the well-known *George the Fifth*, the first of one of the most remarkable classes of 4-4-0s of its time from the performance point of view. On most other railways, too, high-temperature superheating became a recognised feature of design.

Although more powerful engines were introduced on the Brighton, notably the 4-6-2 and 4-6-4 "Baltic" tanks, more "I3s" had been built, Nos. 77-81 in 1910 and Nos. 82-91 in 1912/13, and the class continued to share in important duties until in later years Southern electrification caused them to lose their former main line status. All but one of the original 27 engines passed to B.R. ownership, but withdrawal has been rapid and the Brighton road knows them no more.

No Spills, no Splashes!

The New British Railways Water Column

FILLING a locomotive tender or tank with water is a fascinating business, at least to the onlooker; perhaps those who have to do the job may not be quite so enthusiastic, especially in cold weather. But no doubt both actors and audience in this regular performance will be interested in the new type of water column or crane that British Railways are trying out. It is easier to handle than the older types, more economical in use, avoids waste of water, and is frost-proof.

Something familiar is missing from this new water column. What is it? Well, look at the picture on this page, and you will see that there is no flexible pipe. This is the elephant's trunk affair or leather "bag," as the fireman calls it, which he stuffs into the filling hole after he has clambered on the tender or tank top. That bag is deceptive; it gets a lot of wear and tear and is not always water-tight, so it is well to keep at a respectful distance when one is in action!

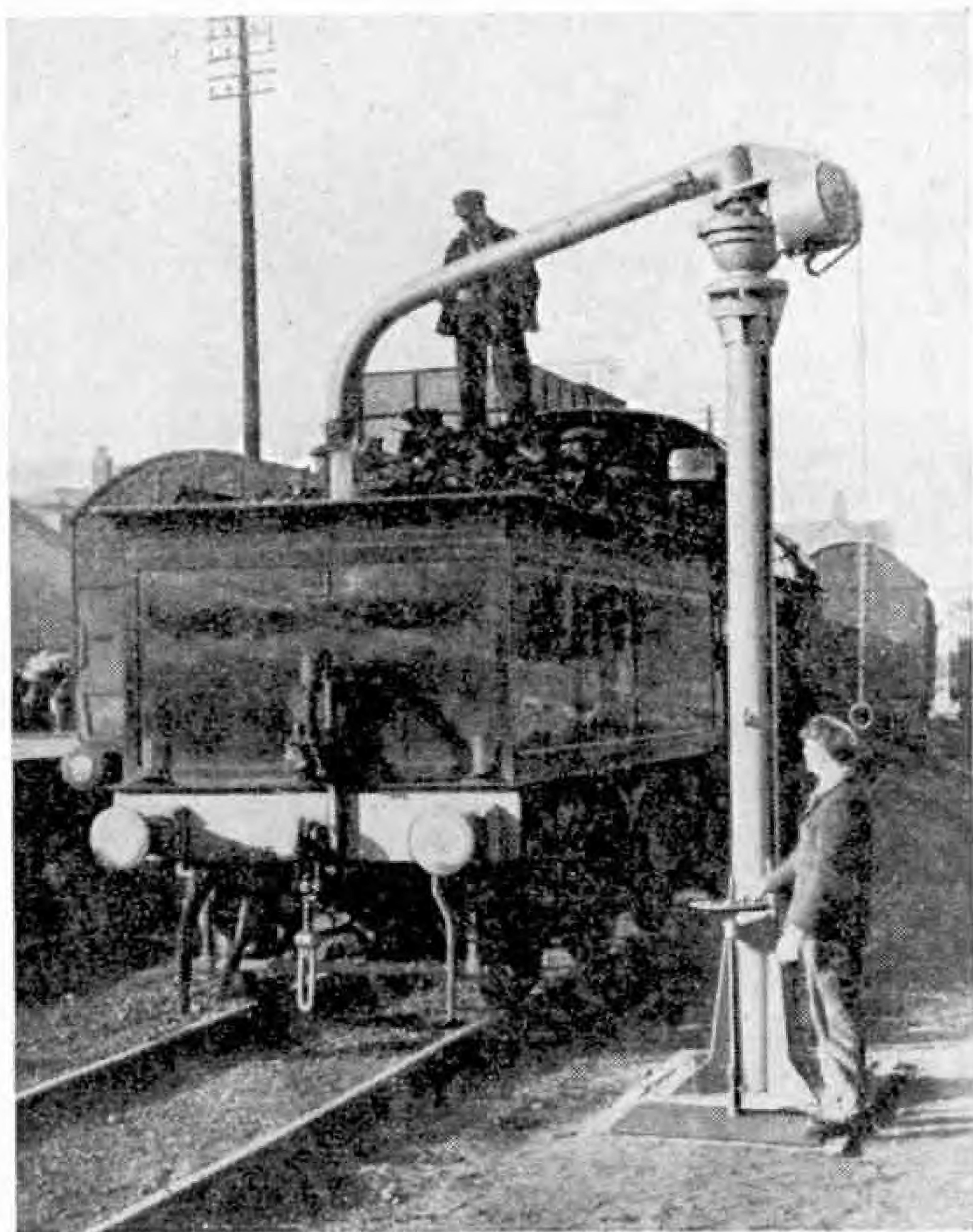
If the bag is a long one, as it must be when the column is a plain one without a swivelling head, it does not lead straight from the column to the filling hole, but has a couple of bends in it. Some water is therefore left in the bag when the supply is turned off by the handle or wheel on or near the column. The partly loaded and somewhat intractable "bag" has then to be slung overboard and a mighty splash usually results.

The antics necessary to handle some of the older types of equipment—and to keep dry while doing this—will not be necessary with the new column. This has a long aluminium pipe-arm, which can be swung round to any point, and its tip can be pressed down to the engine tank opening with one hand. Once the water is turned on from the main the tip is held down by the weight of water running in, as shown in our illustration.

When the water is turned off the pipe-arm rises and surplus water drains back into the supply pipe.

An important point is that as the water can be turned off below ground level the column will be unaffected by frost. Thus the brazier or stove with its smoking coal fire usually found by columns in cold weather will not be needed, and in addition the more or less extensive soakaways, or drainage arrangements, normally provided with the existing type of water column will be unnecessary.

The new type column is in use at a number of Motive Power Depots, and others will be installed if experience in service shows them to be entirely satisfactory. Taken all round, the new column, with its simple nozzle and counter-weighted pipe-arm, has a plainer and lighter appearance than that of older types that have become so familiar to all of us, and it certainly has a more workmanlike look about it.



The engine crew fill their tank from the new experimental B.R. water column described on this page. British Railways Official Photograph.

Arctic Air Routes

Between East and West Across the North Pole

By Frank Illingworth

The statement of only ten years or so ago that in time the North Pole would be straddled by civil air routes between Europe and Asia has come true. In the thirties, indeed even five years ago, most of us smiled good naturedly at stories of the coming Grand Arctic Circle Air Routes, thinking of these as something not just around the corner but belonging to the distant future.

But now the Grand Arctic Circle Air Route has almost burst upon the world of aviation. Two great DC.6s flew from Seattle to Copenhagen via the Polar Regions last autumn, and the operating company, Scandinavian Airlines, is running a regular air service from Seattle to Europe via the Pole this summer. B.O.A.C. has announced that the corporation's great *Britannias* will be operating a London-Tokio service via Arctic Greenland within two years.

Meanwhile, Canadian Pacific Airlines is to launch a scheduled Tokio-Vancouver Arctic-London service this summer. This new air route has a great future. Why? Because, as the newspaper articles of years ago told us, the shortest distance between Europe and the Far East is via the polar regions. A saving of distance means savings in air fares and freight costs—and in flying time. For example, it will take B.O.A.C. airlines 10 hours less between London and Tokio via the Arctic than via Bangkok. And again, the 1,500 miles saved in flying from Los Angeles to London via the Pole compared with the conventional route across the United States to New York, change, and across the North Atlantic, is reflected in an air-time saving of 14 hours. The new C.P.A. Vancouver-to-London via Greenland flight will knock 16 hours off the conventional route, which is to Montreal by Trans Canada Airlines and then by

T.C.A., B.O.A.C., or one of the other companies operating on the Atlantic run.

In time, there is every certainty of regular air routes too across the *South* Polar Continent, between South America, Australia, South Africa and India, etc. Meanwhile, the suddenness with which the new *North* Polar Air Route has burst upon us is due to one thing only—the construction by the Americans of a \$90,000,000 military airbase hard-by the Eskimo village of Thule, in the extreme north-west of Greenland.



Thule Mountain, seen in this illustration, is near the site of the great United States air base in the Arctic Regions to the north of Canada.

Modern aircraft have a range sufficient to fly between Europe and North America via the North Pole. Many such flights have been made by British, Norwegian and Russian military aircraft. But to operate civil air services across the white desolation of the Far North necessitates a half-way stop at which airlines could land in case of emergency.

Thule Airfield offered first such an "emergency stop." The United States granted permission for civil aircraft to use this, an airfield built purely for military purposes, and the long-promised Grand Arctic Circle Air Route not only became practicable but was born with the suddenness almost of an explosion. And so, this summer, air passengers touch down



Loading a DC3 at Kotzebue, on the Alaskan coast of the Bering Strait.

on an airfield sandwiched between the pack ice of Arctic seas and the 10,000-foot dome of the Greenland ice cap, and then fly on across polar wastes, where scores of explorers have perished, on regular services twixt East and West via the Far North.

What if an airliner is forced down in this terrible wilderness? The answer to this question is that modern aircraft offer almost complete safety, and to reduce the risk involved in the infrequent forced landing a well-knit rescue and aid organisation has been built up along the entire length of the new polar air routes.

We all remember how quickly and efficiently the crew of a crashed Hastings bomber was picked off the 10,000 ft. thick Greenland ice cap last autumn. This rescue operation was based on Thule. There are similar rescue organisations in Arctic Canada, where the R.C.A.F. maintain a full-time air rescue service, and right across Alaska, and the new route is adequately served by radio stations, radar and Loran—long range aid to navigation—and meteorological stations

maintained by Canada's Ministry of Transport and by the Alaska authorities.

Popular opinion has it that the Far North is subject to constant blizzards. But this is far from the truth. The wind *can* be unbelievably strong—120 m.p.h. is nothing uncommon, and wind speeds of 150 m.p.h. have been recorded—and this is the reason for fixing cables at Thule to which ground and maintenance crews can cling when moving from one building to another. But these winds are usually *ground* winds only. The upper air above 70 deg. N. is *easterly*, while south of this latitude at 25,000 feet the wind averages 30 m.p.h. *westerly*. This means a following wind both ways with a consequent saving in petrol and running expenses—and also, no "bumpiness."

As for the cold of the polar regions—passengers will soon learn that winter temperatures over Goose Bay and Gander Airports in Labrador are generally lower than those of Thule.

That Canadian Pacific Airlines and Wien Alaska Airlines operate regular air schedules to the settlements on the very shore of the Polar Ocean is evidence that flying from London to Tokio is no more dangerous via Thule than via Bangkok. A Canadian invention has eradicated the hazards that, up to a year or so ago, arose from the peculiarities of navigation in the Far North. This invention is the twilight computer.

The magnetic compass is next to useless for polar navigation—the early explorers were quick to learn that. But the gyro-compass solved the problem of the Magnetic

(Continued on page 344)

At Point Barrow, on Alaska's Arctic coast, there are a United States Navy research station and an airstrip.



Hydro-Foils and Hydro-Skis

By John W. R. Taylor

FORTY years ago the Bristol Aeroplane Company built two very interesting aeroplanes called the Burney X-1 and X-3, fitted with a "Hydroped" water undercarriage designed by Lieut. (now Sir) Dennistoun Burney. This "Hydroped" consisted of three stalky legs carrying a series of hydro-foils, rather like small wings, and a water propeller. It could be fitted only to aircraft with boat-shaped fuselages, as it did not function until the machine started to move.

The idea was that, for take-off, the pilot would start his engine and engage the water propeller only.

This would cause the aircraft to move forward and, at the same time, begin to lift its fuselage clear of the water by "stepping up" from one hydro-foil to the next. When he reached high speed and the bottom step, the pilot was supposed to engage the flying propeller and take off.

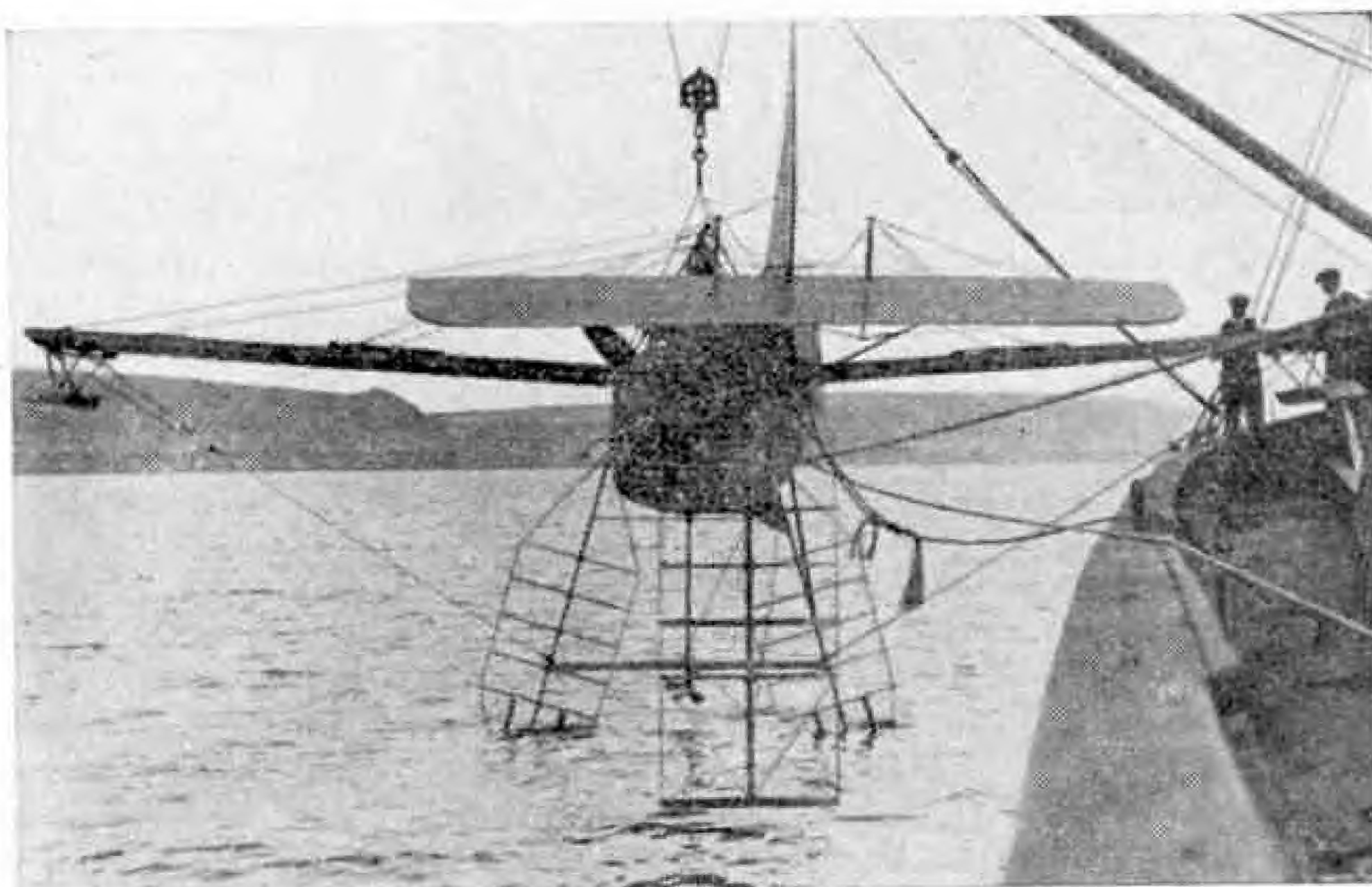
What actually happened was that, when towed behind a fast destroyer, the X-3 rose from the water and became airborne at the end of its tow-rope like a kite. It then proceeded to do what almost any other self-respecting kite would have done in the circumstances—roll over and dive into the water.

But the idea of a hydro-foil undercarriage was not forgotten, and in 1929 the Italian Piaggio company revived it in their remarkable P.7 Schneider Trophy seaplane, which was basically a streamlined, 970 h.p. development of the Burney 'boat'. It might have given our Supermarine S.6 racing seaplanes a good run for their money had today's knowledge of clutch design and shaft drives been available. But it was not, and the whole idea of hydro-foils was shelved, except for small-scale experiments, until jet-propulsion came along to remove the necessity for complex propellers, clutches and shafts.

By then, flying boats seemed to be on the

way out. The world's airlines had switched almost entirely to landplanes, and the Royal Air Force showed little further interest in water-based aircraft. Surprisingly, flying boat designers did not seem unduly perturbed. Instead, with a smug "wait and see" attitude, they sat down at their drawing boards and, in great secrecy, began to create a fantastic series of aircraft designs which looked like giant versions of the "water boatmen" insects that can be seen "skating" across the tops of ponds in summer time.

By about 1950, when landplane fighters



This view of the Bristol-Burney X-3 shows the boat-like hull and stalky "Hydroped" water undercarriage. Photograph by courtesy of The Bristol Aeroplane Co. Ltd.

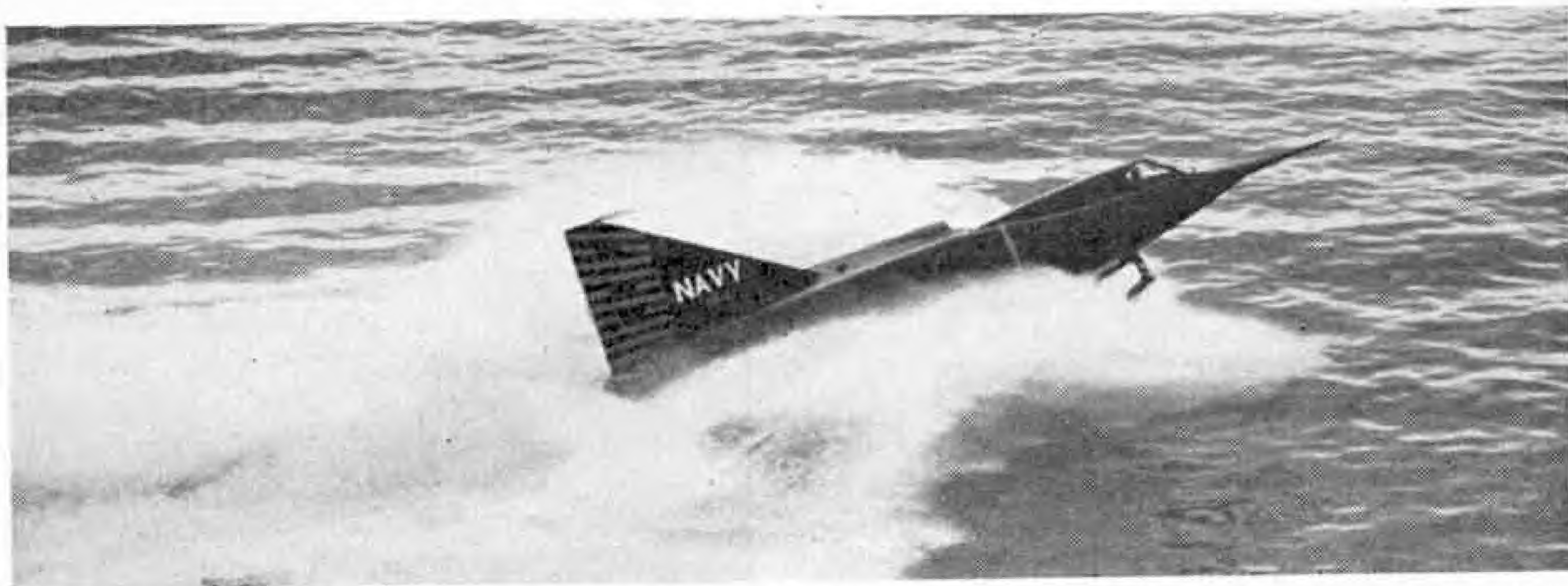
were beginning to fly faster than sound, the flying boat enthusiasts were even boasting that it would be easier to build small supersonic flying boat fighters than supersonic landplanes. The devices that enabled them to make this apparently rash claim were not very different from Sir Dennistoun Burney's "Hydroped," and were of two types—hydro-foils and hydro-skis.

Basically, hydro-skis are identical with the planing surfaces found on floats and flying boat hulls, except that they are mounted clear of the main buoyancy

FLOAT

EQUIVALENT HYDRO-SKI



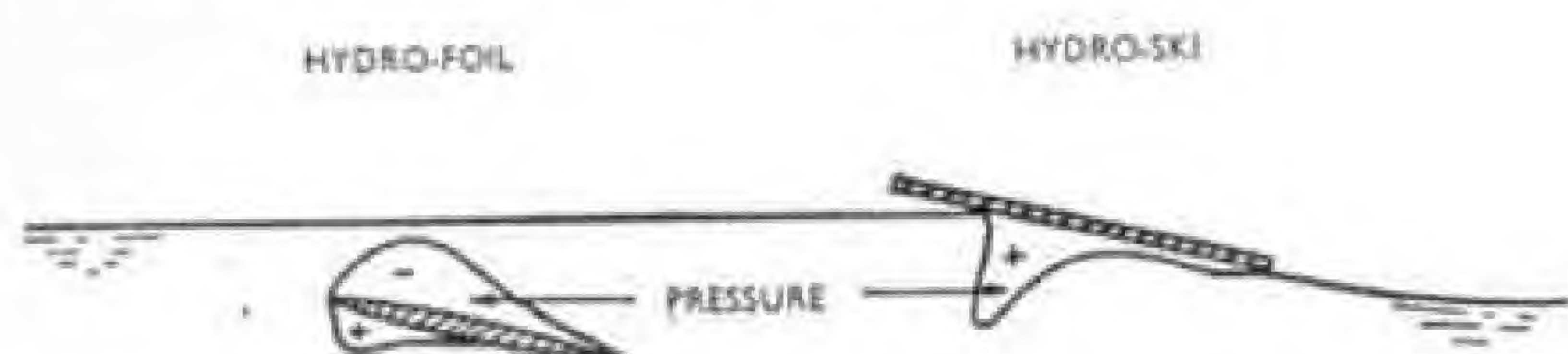


The Convair XF2Y-1 Sea Dart delta-wing, hydro-ski fighter. It has no horizontal tail structure, but is equipped with a triangular shaped vertical fin and rudder. The illustrations on this page are by courtesy of the Consolidated Vultee Aircraft Corp., U.S.A.

structure as shown at foot of previous page.

The rear planing surface of a normal float is effective only during the early stages of take-off. So, for this reason, the rear hydro-ski can usually be dispensed with, leaving the fuselage tail to act as a planing surface until a high enough speed is reached for the aircraft to skim along on its skis.

The fundamental difference between hydro-foils and hydro-skis is, therefore, that the hydro-foil operates *in* the water, generating lift with both its upper and lower surfaces, while the hydro-ski skims the surface of the water and generates lift on its bottom surface only.



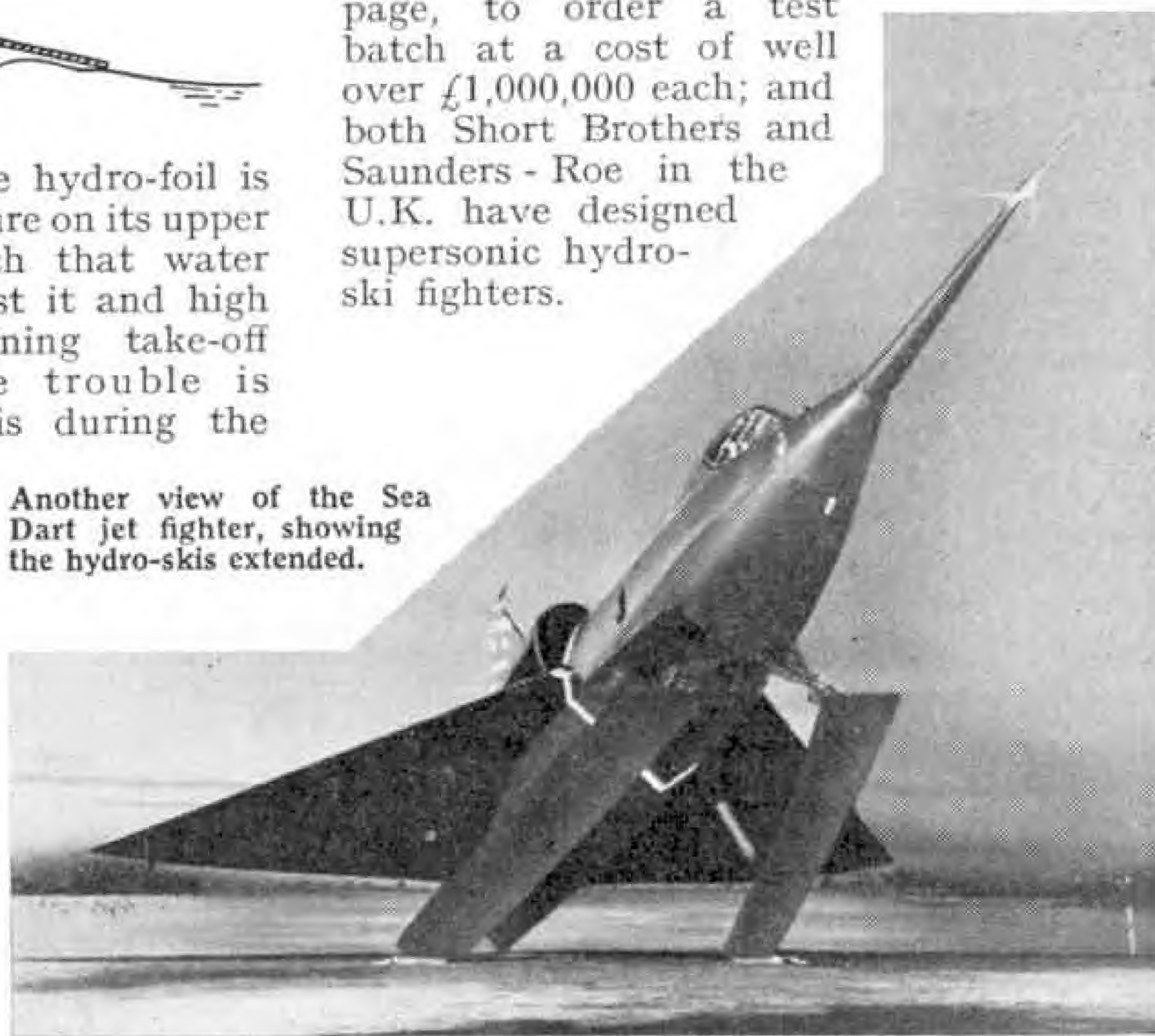
Chief disadvantage of the hydro-foil is that at high speeds the pressure on its upper surface is reduced so much that water ceases to flow smoothly past it and high drag is encountered, ruining take-off performance. The same trouble is experienced with hydro-skis during the first stages of take-off, as they are then submerged and act in the same way as a hydro-foil. But once high speed has been attained, they skim over the water like a surf-board towed behind a fast motor boat, and the seaplane can quickly build up flying speed.

Beauty of hydro-skis is, of course, that they can be retracted into the bottom of the aircraft's fuselage

during flight, taking up less room than a landplane's wheeled undercarriage and permitting an equally good streamlined shape for the aircraft as a whole. Being comparatively small and heavily loaded, they are most suitable for small aircraft like fighters, and can only be used in fairly sheltered water. But there are plenty of places throughout the world where a few squadrons of hydro-ski fighters would be worth their weight in gold, either because aerodromes do not exist or because they are vulnerable to enemy attack.

Anyway, the U.S. Navy was sufficiently impressed by the possibilities of Convair's XF2Y-1 Sea Dart delta-wing hydro-ski fighter, shown on this page, to order a test batch at a cost of well over £1,000,000 each; and both Short Brothers and Saunders-Roe in the U.K. have designed supersonic hydro-ski fighters.

Another view of the Sea Dart jet fighter, showing the hydro-skis extended.



Humour in Photography

By E. E. Steele

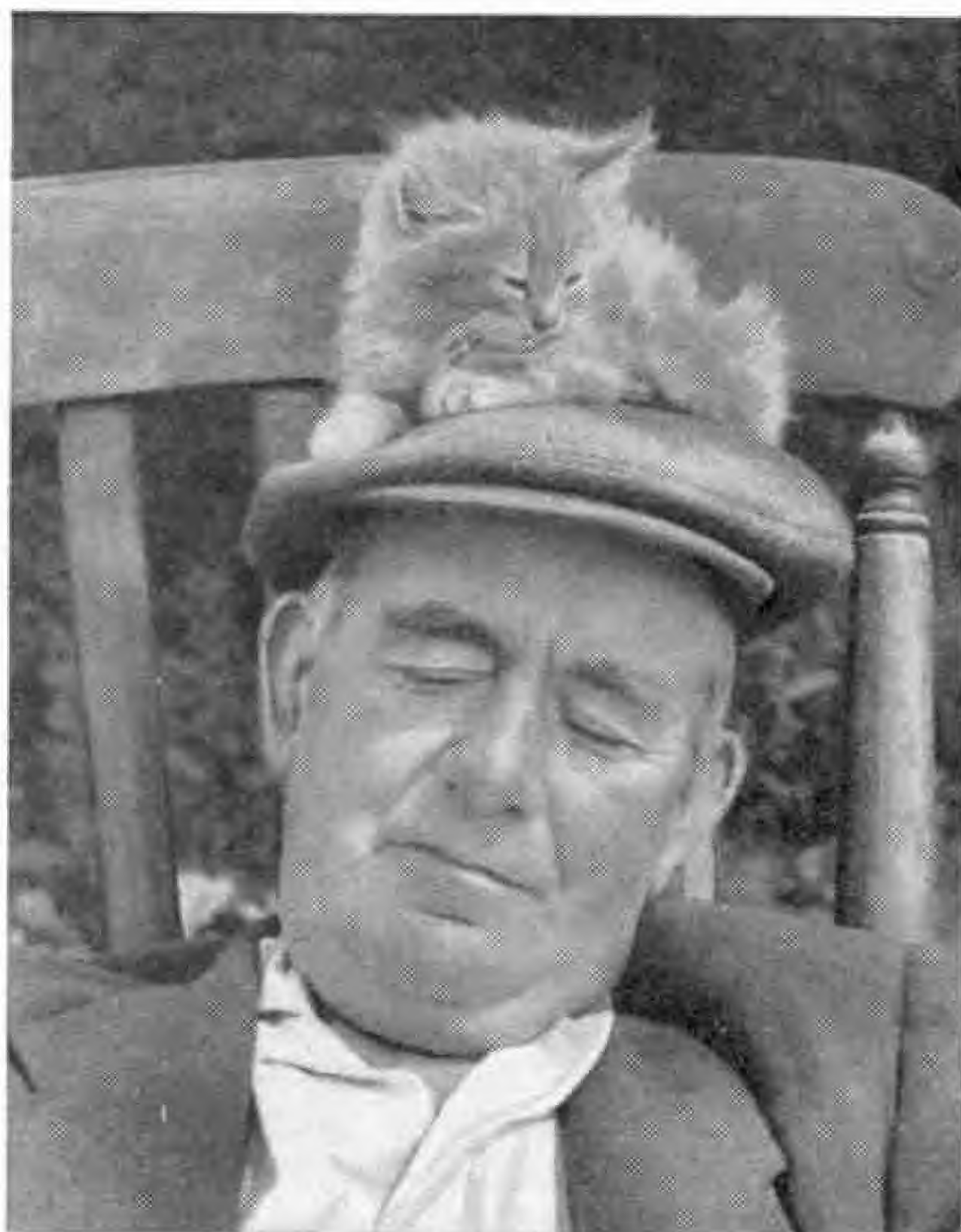
THE term "serious" is often used to distinguish the enthusiastic photographer from the casual snapshotter. This rather dull word, in fact, is used to describe the kind of photographs we see in Art Galleries and at Photographic Exhibitions. There some of the work shown is *very* serious, not to say boring, and rather beyond the scope of many who contrive to get a lot of fun out of their hobby. In the hands of the alert enthusiast, however, the camera can be just as successful in capturing the "lighter" side of life, with that touch of humour which brings a smile to most of us ordinary folk.



Out for a walk.

Many of the humorous pictures we see in magazines are obviously "staged," or prepared, but lots of funny incidents can be met with, and photographed, in everyday life without any preparation, other than having a camera ready for instant action. The small modern camera, which is easily concealed in the pocket, is a great advantage. Such cameras, with short-focus lenses giving great depth of focus, can have the distance scale set around 20 feet, and the lens stopped down to f/8, or f/11, and the shutter speed adjusted to suit lighting conditions. It is then only necessary to whip the camera out of the pocket, sight the subject quickly in the viewfinder, and press the release, the whole being easily done in a few seconds.

The element of surprise is mostly necessary when taking people seen in funny situations, as then the expressions are perfectly natural, but they will abruptly cease to be so the moment the "victim" catches sight of the camera. People asleep on park benches have long been fair game to the humorous photographer, but many opportunities occur around the home and garden. Those shown in the illustrations on



Two's Company. The illustrations to this article are from photographs by the author.

this page were seen and snapped on the spur of the moment, and were not "arranged" in any way. Indeed, I was trying to photograph the cow shown in the bottom picture myself, when I realised there was more fun in taking a picture of my friend's attempt!

Animals are well worth studying for humorous photographs, and most of the funny pictures in newspapers feature some form of four-footed creature, especially cats and dogs, but these ought not to be dressed up to make them appear ridiculous. Pictures in which this has been done are not really funny at all, and do the photographer little credit.

Young children often unconsciously create comic situations when they try to copy some action of their parents or elder brothers and sisters. If you have a camera handy you can get some delightful photographs.

Most of the big newspaper photographic competitions, in full swing at this time of the year, have a special section with prizes for humorous photographs. If you should succeed in getting a really good one, do not fail to send it in, for such pictures are less common than the "serious" kinds.



Suspicion!



Club and Branch News



WITH THE SECRETARY

THE HOLIDAY SEASON

Once more we have reached the holiday season of the year, and I hope that every member of the Guild and the H.R.C. will have a thoroughly enjoyable and healthy time, whether holidaying at the seaside or in the country, indulging in local daily excursions or just happily "pottering about" at home. In some Clubs and Branches the height of the holiday season is celebrated by a week "under canvas" and, if blessed by fine weather, this is one of the finest ways of spending a holiday out-of-doors.

This is also the time of year when the photographers in the organisation are, or should be, busiest, as conditions generally are ideal for compiling a photographic record of what the members have been doing outdoors. I look forward to receiving many such photographs, with a view to reproducing those suitable on this page. Club funds can benefit by the sale of prints developed by the photographers to the members featured in them. A set of the best pictures also can be mounted on a large sheet of stiff paper or cardboard and hung in the Club or Branch room, as a reminder of happy occasions during the summer Sessions.

CLUB NOTES

CRYPT GRAMMAR SCHOOL (GLOUCESTER) M.C.—The subject of a recent Model-building Competition was *Anything in a Fairground*, and some excellent entries resulted. Another contest, a general one, also brought forth some very novel and ingenious models. A Visit to Moreland's Match Factory is being arranged. Club roll: 44. *Secretary*: P. T. G. Hobbs, 31 Estcourt Road, Gloucester.

HORNSEA M.C.—A Quiz between the Club and one of the local schools provided good fun. Films shown have dealt with the Canadian Pacific Railway, Q ships in the last war, and the working of a Diesel engine. A Talk on Farming has been given, and the usual Games Evenings continued. Club roll: 13. *Secretary*: D. M. Stevenson, 29 Southgate Gardens, Hornsea, E. Yorks.

MILE END (PORTSMOUTH) M.C.—The recent Exhibition was a great success, and about 500 people visited the display. The fine array of Meccano models included one 3 ft. long of a submarine, by K. Mills, that was awarded a prize on the judging of the visitors. There was the usual excellent Hornby-Dublo layout, with the Club's model town which has since been extended. Another attraction was an Arts and Crafts stand. A buffet was run by the parents of the Secretary. The Club Photographic Section is making good progress. A Quiz on engineering subjects proved very interesting. Club roll: 48. *Secretary*: Mr. A. J. Nicholson, 213 Sultan Road, Buckland, Portsmouth.

AUSTRALIA

MAYLANDS M.C.—Outdoor activities have included excursions to places of interest, and a paper chase. Many fine models have been built during

recent months, including Eiffel Tower, a giant blocksetting crane, and a large liner. A fine Meccano model of the L.N.E.R. locomotive 10000 has been completed and will be displayed in the Club window. Other indoor activities have been Table Tennis and other Games, and Film Shows conducted by the Club projectionists. Club roll: 45. *Secretary*: B. Lee, 26 Stuart Street, Maylands, Western Australia.

MELBOURNE M.C.—Models built by members and brought to Club meetings have included motor lorries, an electrically-operated steam shovel, clockwork-driven ship coaler, fire engine, breakdown crane and horizontal steam engine. Novelty has been given to Competitions by introducing speed contests, in one of which members had to load and operate a Meccano Gantry Crane. The winner of this test of skill did the job in 1 min. 39 sec., but the slowest competitor took 9 min. 27 sec.! Another speed contest was concerned with driving a locomotive over a definite length of track. Train-running operations are so popular that they are carried out at almost every meeting. Club roll: 10. *Leader and Secretary*: Mr. L. Ison, 8 Hayes Street, Northcote, N.16, Victoria, Australia.

BRANCH NEWS

HINDHEAD AND DISTRICT—A Visit to the Model Railway Exhibition, London, was greatly enjoyed, and at the next Branch Meeting the Exhibition was the subject of an interesting discussion. On another occasion a discussion on Branch layouts was held. The Branch Library has been increased and now totals 65 books. *Secretary*: B. J. Hinde, "Hindhead Brae," Hindhead, Surrey.



Officials and members of the Hindhead and District Branch, No. 541. Mr. E. Hinde, President, is seated in the centre of the second row, with Mr. F. Harris, Vice-President, on his right and Mr. D. Lawson, Chairman, on his left. This flourishing Branch was incorporated in October last year. Track meetings are held regularly, and film shows of railway interest are another popular feature of the Branch programme.

Among the Model-Builders

By "Spanner"

A Totally Enclosed Free Wheel

The free wheel mechanism illustrated in Fig. 1 forms an interesting and novel variation from the more usual pawl and ratchet type of mechanism and one of its features is that the driving and output shafts are arranged in line. This is an

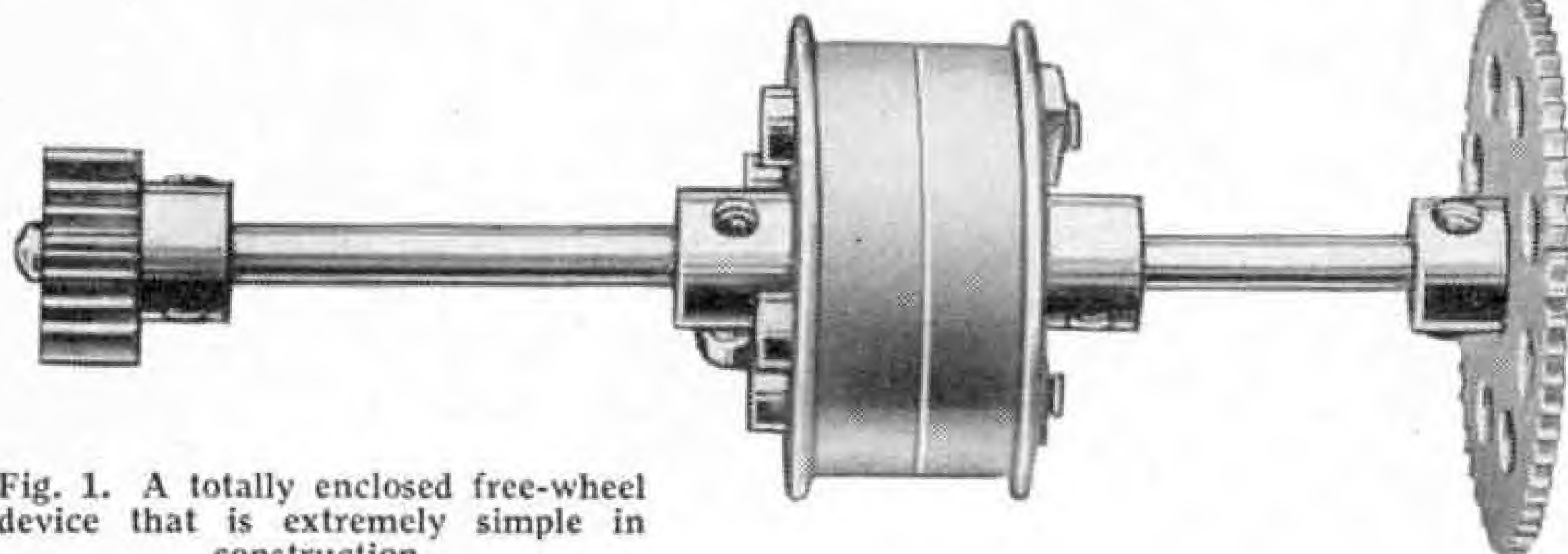
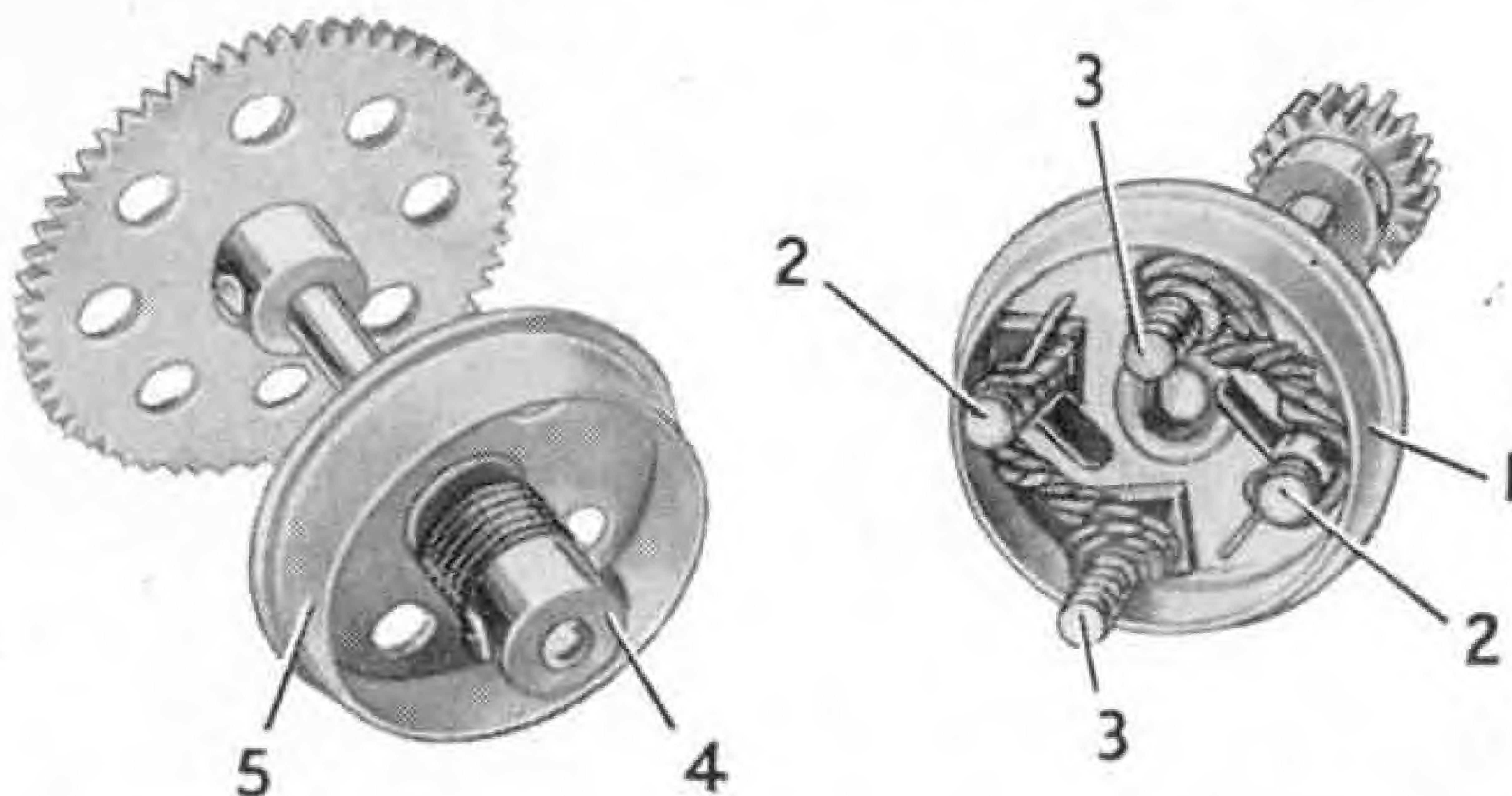


Fig. 1. A totally enclosed free-wheel device that is extremely simple in construction.

advantage in some circumstances, while the compactness of the device is another useful feature.

The driving shaft of the mechanism is fixed in the boss of a $1\frac{1}{8}$ " Flanged Wheel 1. Two $\frac{1}{2}$ " Bolts 2 are fixed by nuts in opposite holes of the Flanged Wheel, and a Spring Clip is pressed over each bolt. A $2\frac{1}{2}$ " Driving Band is slipped over one of the lugs of each Spring Clip and is passed round the outside of the $\frac{1}{2}$ " Bolt, between the Bolt and the inner edge of the Flanged Wheel. The Driving Band is then twisted three or four times round a $\frac{3}{4}$ " Bolt 3 until it has sufficient tension to twist the Spring Clip on the $\frac{1}{2}$ " Bolt so that the free lug is pulled towards the centre of the Flanged Wheel.

The driven member of the free wheel is a Collar 4 fitted with two Grub Screws. The Collar is fixed on a Rod that is free to turn in a Flanged Wheel 5, but it is spaced from the Wheel by Washers. Flanged Wheel 4 is slipped over the $\frac{3}{4}$ " Bolts 3, and nuts are used to hold the two Wheels tightly together. The free lugs of the Spring Clips engage the Grub Screws in the Collar 4.



A Fine Meccano Storage Cabinet

There are many Meccano enthusiasts who have accumulated large quantities of parts, and by continually buying extra pieces have gradually built up collections that have long outgrown the storage

capacity provided by their Outfit Cartons. Model-builders lucky enough to have such spacious collections at their disposal, and who are perhaps wondering about the best method of

storing them, will be interested in a fine cabinet built by Mr. H. Treasure, Weston-Super-Mare, which he has designed specially to hold the complete range of parts and to provide him with all the space that he is likely to need.

The cabinet is illustrated on the opposite page, and it has six pull-out drawers, each of which is divided into compartments suited in size and shape to accommodate each part in the system. An interesting point is that Gears, Sprockets and Pinions are stored on short Rods let into the bottom of one of the drawers. This prevents the teeth from being damaged. The cabinet is 3 ft. long, 1 ft. 6 in. deep and

Fig. 2. The free-wheel device partly dismantled in order to reveal the interior details.

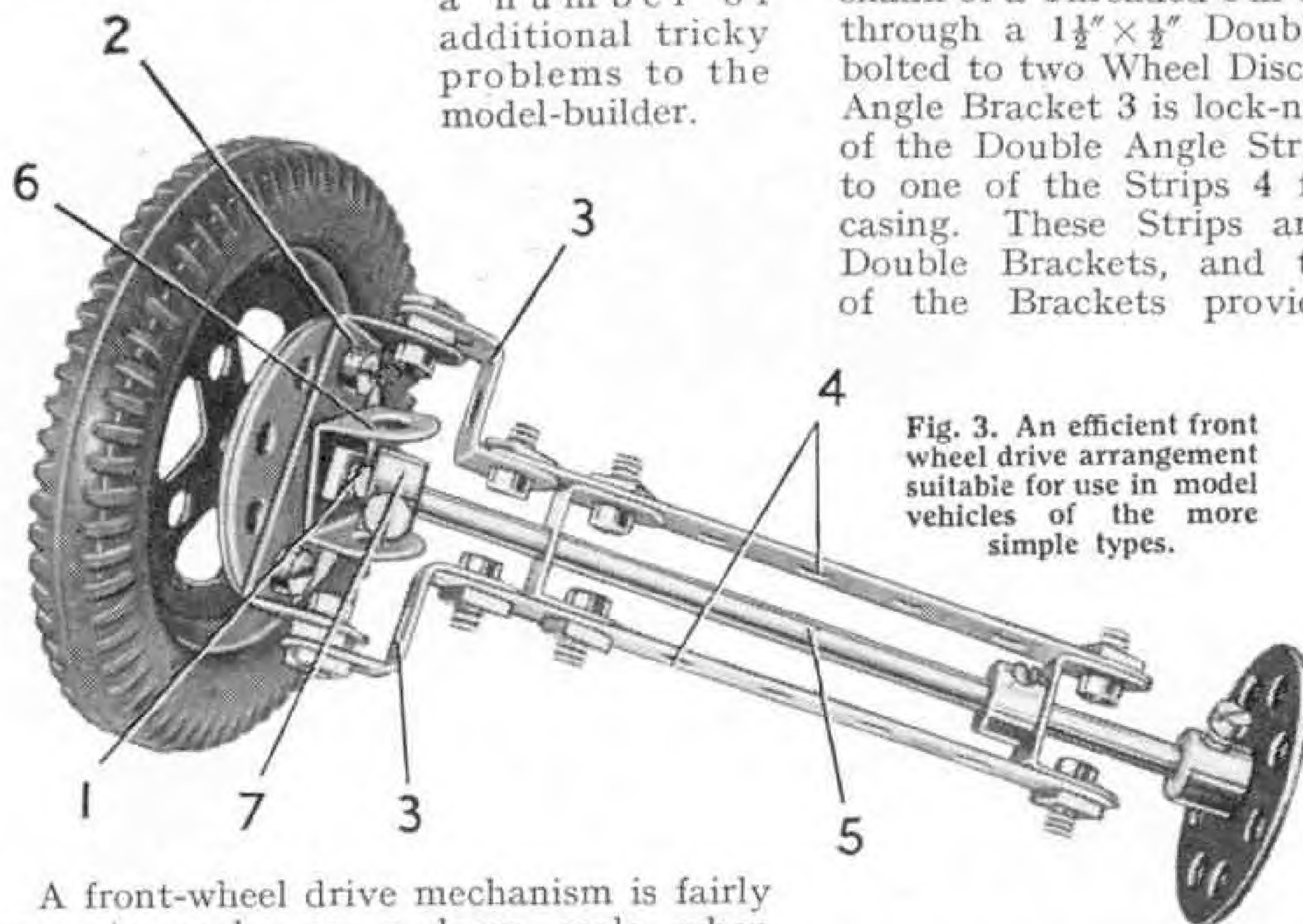
2 ft. 6 in. high, and is fitted with ball-bearing castors so that it can be easily pulled or pushed into any required position. The cabinet was built, stained and grained in a light oak shade, by Mr. Treasure himself, who tells me that he values his collection at more than £100.

A Simple Front-Wheel Drive

It is evident from my correspondence that motor vehicles are among the most popular subjects for Meccano models, and certainly the design and construction of gear-boxes, differentials, etc., for these models offers great scope for model-builders to exercise their ingenuity.

Many modern vehicles intended for work on rough ground are fitted with four or six-wheel drives, and of course the transmission to the front axle presents

a number of additional tricky problems to the model-builder.



A front-wheel drive mechanism is fairly easy to make on a large scale when Universal Couplings can be used, but it is not so easy to design a suitable mechanism for small models. Most owners of small Outfits indeed seem to think that a front-wheel drive is outside the scope of their Outfits, but it is possible to make a satisfactory mechanism that can be fitted even to No. 6 Outfit models. I hope the suggestion shown in Fig. 3 will be



Mr. H. Treasure, Weston-Super-Mare, has solved the problem of housing his £100 Collection of Meccano parts by designing and constructing this splendid six-drawer cabinet.

useful to many model-builders, and I shall be interested to hear from any Meccano enthusiast who uses it in one of his models.

The front wheel is fixed on the plain shank of a Threaded Pin 1, which is passed through a $1\frac{1}{2} \times \frac{1}{2}$ Double Angle Strip 2 bolted to two Wheel Discs. A $\frac{1}{2}$ Reversed Angle Bracket 3 is lock-nutted to each lug of the Double Angle Strip, and is bolted to one of the Strips 4 forming the axle casing. These Strips are connected by Double Brackets, and the centre holes of the Brackets provide bearings for the driving axle 5.

Fig. 3. An efficient front wheel drive arrangement suitable for use in model vehicles of the more simple types.

A Double Bracket 6 is fixed tightly by a nut to the threaded shank of the Threaded Pin, and a Collar 7 is locked on the outer end of Rod 5. The Collar is fitted with two $\frac{7}{32}$ Bolts,

and these engage the lugs of Double Bracket 6.

The mechanism will operate satisfactorily when the wheels are steered to quite an appreciable extent, although of course it is not as smooth in operation as the more usual type using a Universal Coupling. It should add a good deal to the interest of a model vehicle, however.

New Meccano Model

Diesel Shunting Locomotive

OUTFIT No. 6 contains all the parts required to build the sturdy diesel locomotive shown in Fig. 1 on this page. The model represents one of the powerful locomotives used mostly for shunting purposes in large industrial works and docks.

The main frames of the locomotive consist of $3\frac{1}{2}" \times 2\frac{1}{2}"$ Flanged Plates 1 connected by a $12\frac{1}{2}"$ Angle Girder 2 and four $12\frac{1}{2}"$ Strips on each side. A $5\frac{1}{2}" \times 2\frac{1}{2}"$

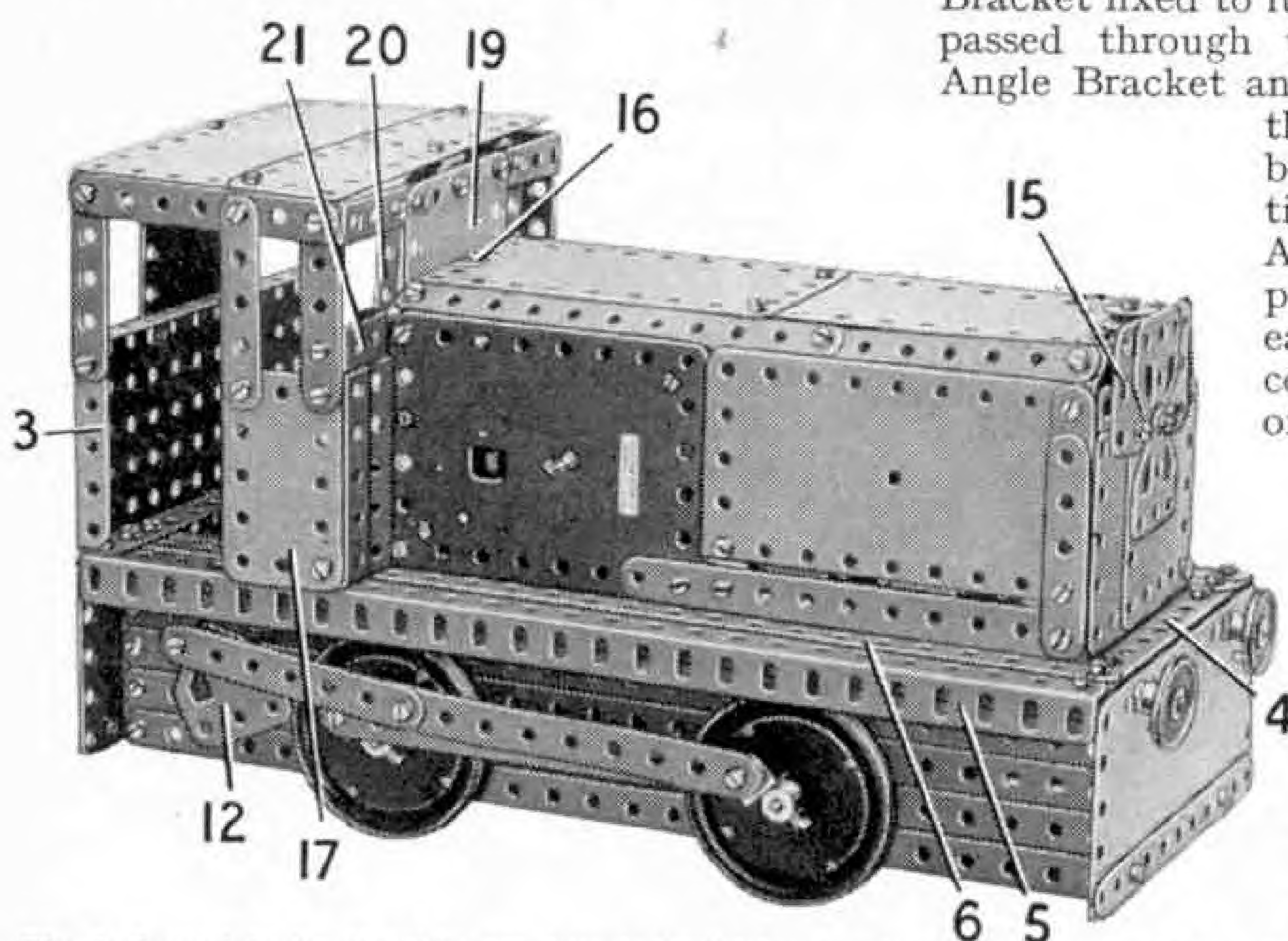


Fig. 1. A model of a diesel locomotive designed for construction from Outfit No. 6.

Flanged Plate 3 is bolted across the rear of the main frames, and a $5\frac{1}{2}"$ Strip 4 is fixed across the front. A $12\frac{1}{2}"$ Angle Girder 5 and a $12\frac{1}{2}"$ Strip 6 on each side are attached to the Flanged Plate 3 and the Strip 4 to form the running plates.

The sides of the engine housing are attached to $3\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strips 7 and 8 bolted to the Angle Girders 2. The side seen in Fig. 1 is made by bolting a No. 1 Clockwork Motor to Double Angle Strip 7, Fig. 2, and to an Angle Bracket fixed to the Girder 2. The Motor side-plate is extended forward by a $5\frac{1}{2}"$ Strip and one half of a Hinged Flat Plate, and the front ends of these parts are edged by two $2\frac{1}{2}"$ Strips overlapped four holes and bolted to the Double Angle Strip 8.

The side shown in Fig. 3 consists of a $4\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plate and the other half

of the Hinged Flat Plate. It is attached at the rear to a 3" Strip bolted to Double Angle Strip 7, and at the front to two $2\frac{1}{2}"$ Strips overlapped four holes and fixed to Double Angle Strip 8. The overlapped $5\frac{1}{2}"$ Strips 9 complete the lower edge of this side.

Two of the driving wheels are fixed on a 5" Rod mounted in the main frames, and the other two are held on a compound rod made from a $3\frac{1}{2}"$ and a $1\frac{1}{2}"$ Rod joined by a Rod Connector. Each wheel has an Angle Bracket fixed to its boss. A nut and bolt is passed through the round hole of the Angle Bracket and is screwed into one of

the tapped holes of the boss. The nut is then tightened to hold the Angle Bracket firmly in position. The wheels on each side are linked by coupling rods consisting of $5\frac{1}{2}"$ Strips lock-nutted to the Angle Brackets. The setting of the coupling rods is very important. They must be adjusted so that they are at an angle of 90° to each other.

The wheels are driven by cranks on a 5" Rod 10. The crank 11 consists of a Flat Trunnion bolted to the face of a Bush Wheel, and crank 12 is made by bolting a Flat Trunnion to an Angle Bracket fixed by a nut and bolt to the tapped hole of a Collar. The Bush Wheel and the Collar are fixed on the ends of Rod 10, which is held in place by Spring Clips and is fitted with a 3" Pulley 13.

The cranks drive the wheels through connecting rods. One of these is made from a $5\frac{1}{2}"$ and a 3" Strip, and the other consists of a $5\frac{1}{2}"$ and a $3\frac{1}{2}"$ Strip. One end of each connecting rod is lock-nutted to the Angle Bracket on one of the front driving wheels, and the other is pivoted on a $\frac{3}{4}"$ Bolt held in the crank by two nuts. A Collar and six Washers on each bolt space the connecting rod from the crank.

The drive to Rod 10 is taken by a Driving Band from a $\frac{1}{2}"$ Pulley on the Motor to a 3" Pulley on a 4" Rod 14.

A 1" Pulley on this Rod is connected by a Cord belt to the 3" Pulley 13.

The front of the engine housing is made from two $2\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plates overlapped three holes, and a $2\frac{1}{2}" \times 1\frac{1}{2}"$ Flexible Plate 15. Then it is attached to the sides by Angle Brackets. A $5\frac{1}{2}"$ Strip and a $3\frac{1}{2}"$ Strip on one side, and two $5\frac{1}{2}"$ Strips on the other, are fixed to Obtuse Angle Brackets bolted to the sides, and the top of the housing, made from a $5\frac{1}{2}" \times 2\frac{1}{2}"$ and a $4\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plate, is connected to the forward ends of these Strips by Obtuse Angle Brackets. The top is supported at the rear by an Angle Bracket 16 fixed to the front of the cab.

The front of the cab is

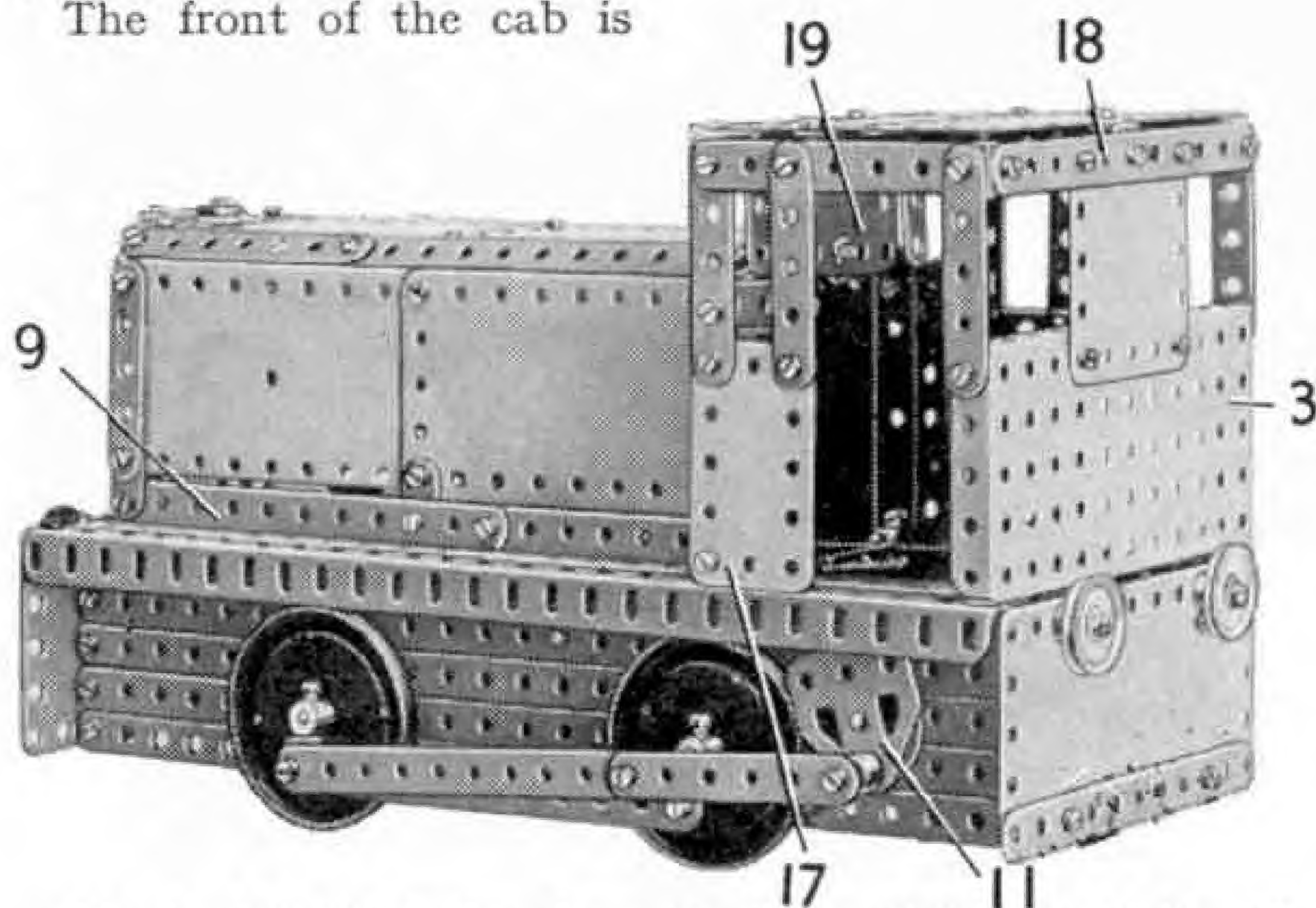


Fig. 3. This illustration shows the details of the rear of the cab.

made by bolting two $2\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strips to the Girder 5 and Strip 6 on each side. A third $2\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strip is fixed to the Girder 5 at right-angles to the others, and this serves to support a $2\frac{1}{2}" \times 1\frac{1}{2}"$ Flexible Plate 17 that forms the side of the cab. The roof is supported on each side by three $2\frac{1}{2}"$ Strips connected at their upper ends by a $3\frac{1}{2}"$ Strip. At the rear the $3\frac{1}{2}"$ Strips are connected by Angle

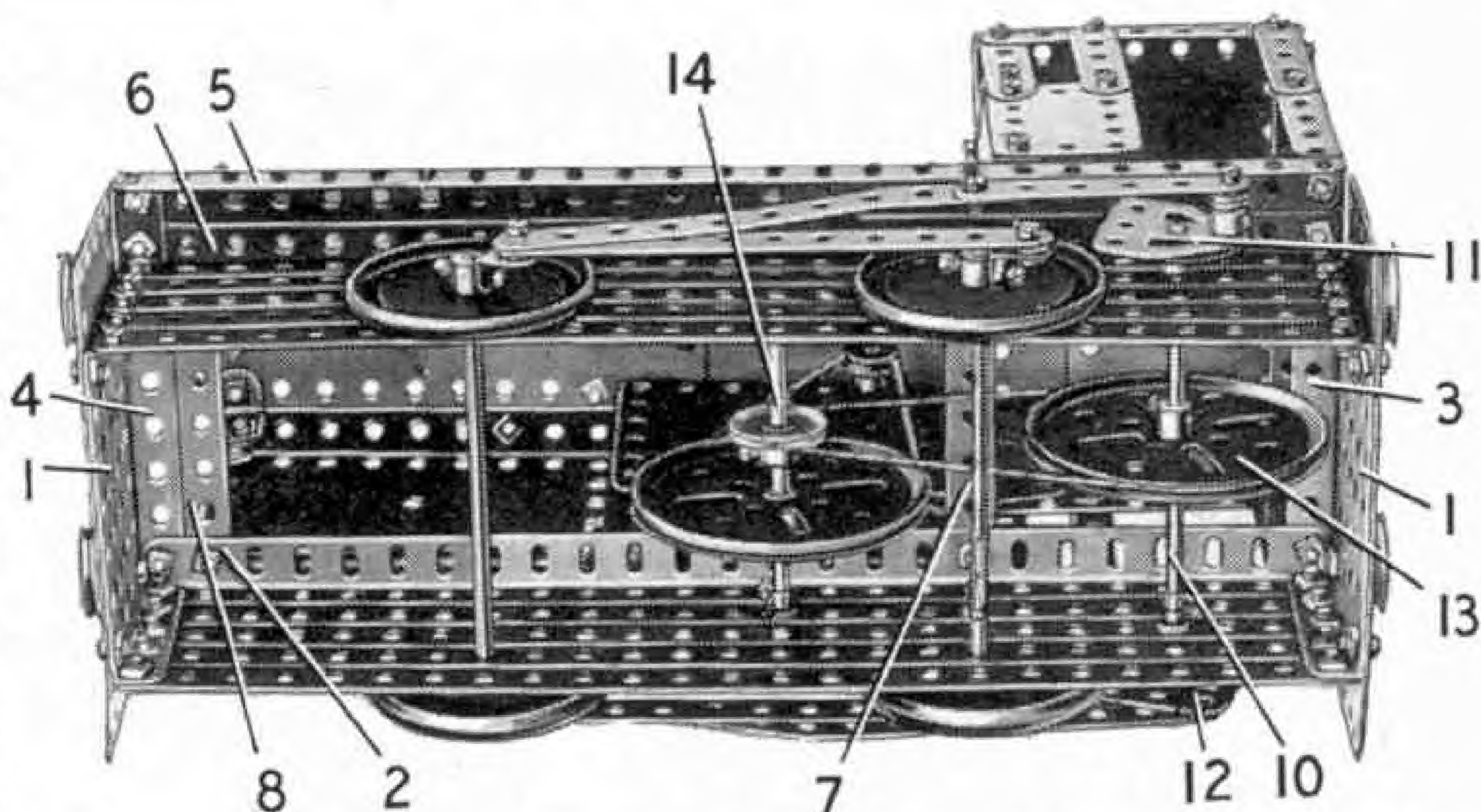


Fig. 2. An underneath view of the locomotive showing the pulley and belt reduction drive to the wheels.

Brackets to a $5\frac{1}{2}"$ Strip 18, and at the front they are joined by $2\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strips to a $2\frac{1}{2}" \times 1\frac{1}{2}"$ Flexible Plate 19. The Angle Bracket 16 is attached to the lower edge of this Flexible Plate. The front of the cab is completed by a $1\frac{1}{2}"$ Strip 20 and a $1\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strip 21 on each side.

The cab roof consists of a $5\frac{1}{2}" \times 2\frac{1}{2}"$ and a $5\frac{1}{2}" \times 1\frac{1}{2}"$ Flexible Plate attached to the Strip 18 and the Flexible Plate 19 by Angle Brackets.

The model is completed by a $5\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plate bolted to each of the Flanged Plates 1. The buffers are 1" Pulleys, and they are fixed on $\frac{3}{8}"$ and $\frac{1}{2}"$ Bolts.

The drive fitted between the Clockwork Motor and the driving wheels gives a reduction ratio of approximately 12:1, and quite a powerful drive is obtained. The throw of the cranks 11 and 12 should be exactly the same as the throw provided by the Angle Brackets on the driving wheels.

Parts required to build the model Diesel Shunting Locomotive: 10 of No. 1; 14 of No. 2; 4 of No. 3; 2 of No. 4; 11 of No. 5; 2 of No. 6a; 4 of No. 8; 2 of No. 10; 13 of No. 12; 6 of No. 12c; 2 of No. 15; 1 of No. 15b; 1 of No. 16; 1 of No. 18a; 2 of No. 19b; 5 of No. 22; 1 of No. 23; 1 of No. 23a; 1 of No. 24; 4 of No. 35; 120 of No. 37; 10 of No. 37a; 16 of No. 38; 1 of No. 40; 2 of No. 48; 8 of No. 48a; 2 of No. 48b; 1 of No. 52; 2 of No. 53; 3 of No. 59; 2 of No. 111; 2 of No. 111a; 4 of No. 111c; 4 of No. 126a; 1 of No. 186b; 4 of No. 187; 4 of No. 188; 1 of No. 189; 3 of No. 190; 2 of No. 191; 4 of No. 192; 1 of No. 198; 1 of No. 213; 1 No. 1 Clockwork Motor.

Special Summer Competition

Meccano "Realism" Contest

IN the June *M.M.* we announced details of a special summertime Competition in which model-builders were invited to send in entries showing Meccano models set up in realistic outdoor surroundings. The idea behind this Competition is that it allows all the necessary work in preparing an entry to be done out-of-doors in the garden, so that model-builders can make the most of the summer season and need not stay indoors model-building.

This special Contest will remain open until 31st August, so there is still time to prepare and send in entries. *The Competition is open to readers of all ages.*

There is of course no need to build a special model for the purpose of this Contest. Any model of a suitable type that is already built, may be used, and all that is necessary is to arrange it in a suitable and realistic outdoor setting and then obtain a photograph of the complete scene, or alternatively make a drawing of it.

Examples of suitable models that will lend themselves readily for a contest of this kind are vehicles, bridges, mechanical excavators, ships and tanks, and there are many others that model-builders will be able to think of. A mechanical shovel set in a miniature quarry or sandpit in the garden, and a motor car passing over a Meccano bridge erected over a small "river," are two of many ideas that could form the basis of a suitable and attractive entry.

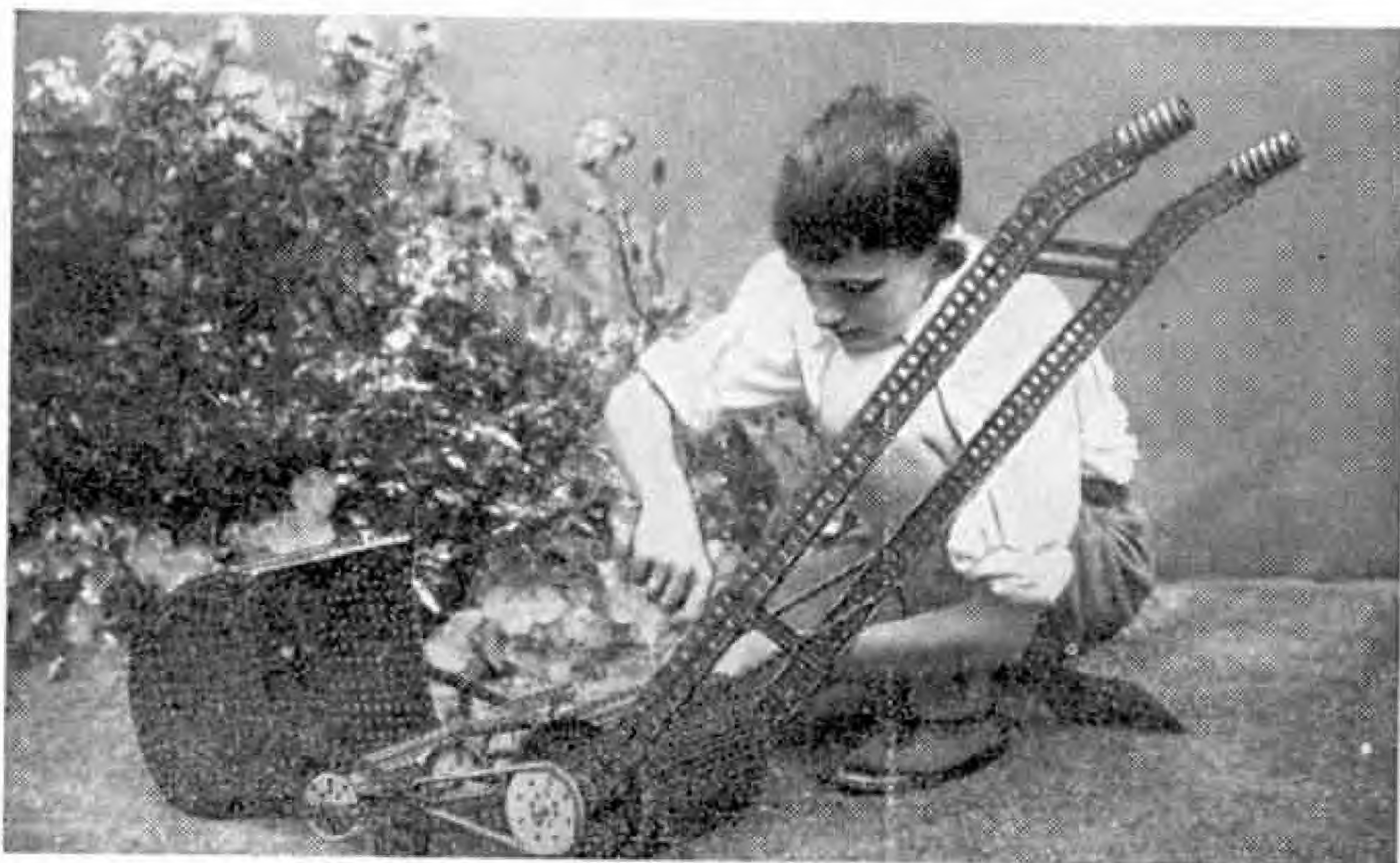
Elaborate surroundings are not necessary. The main object is to make the scene as lifelike as possible, and this can be done quite easily with very simple materials, such as earth, rocks and water.

We realise that climatic conditions for some of our readers overseas are exactly opposite to those existing in this country

at the present time and therefore it has been decided that Overseas competitors may submit models set up in realistic surroundings *indoors* if circumstances make this desirable.

There will be one Section only for both Home and Overseas competitors, and the prizes to be awarded are as follows: First, Cheque for £6/6/-; Second, Cheque for £4/4/-; Third, Cheque for £2/2/-. There will be also 10 Prizes each consisting of a Cheque for £1/1/-.

Entries must bear the competitor's age, name and address, and should be addressed *Meccano Realism Competition, Meccano Ltd., Binns Road, Liverpool 13.* They must be posted in time to reach Liverpool not later than 31st August.



This Meccano lawn mower, photographed in its natural setting, the garden, would have made a fine entry for the Competition announced on this page. It is the work of E. D. Clements, Orpington, and won a prize in a previous Realism Contest some years ago.

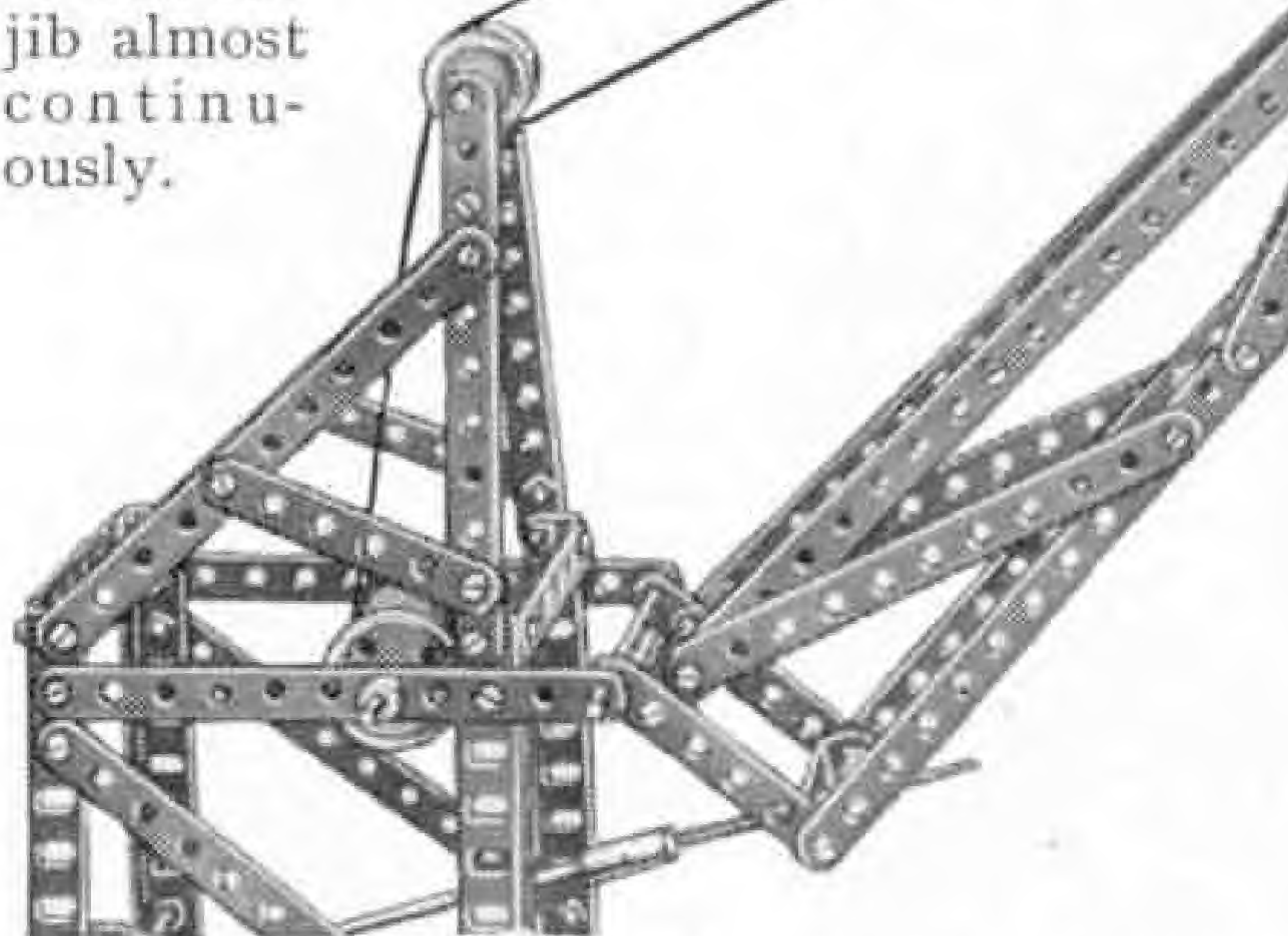
Competitors may send in more than one entry if they wish to do so, but no competitor will be awarded more than one prize. Successful competitors will be notified by letter as soon as possible after the closing date of the contest, and the list of prizewinners, together with a few details of the best entries, will be included in the *M.M.*

Entries that win prizes become the property of Meccano Ltd., but unsuccessful entries will be returned to senders provided that a stamped and addressed envelope is included with the entry for that purpose.

A Useful Crane Mechanism

Load Remains at same Level as Jib is Raised

IN the ordinary type of crane a considerable amount of power is necessary to raise the jib on account of its weight and the effect of the load. How the load affects the operation may be easily demonstrated by means of a Meccano crane. If the jib is luffed in with the hoisting barrel "braked," the load will be found to rise also, so that power has to be expended in lifting the load as well as in lifting the dead-weight of the jib. In practice this means a heavy increase in running costs, especially in the case of cranes engaged in the handling of ships' cargoes, where it is necessary to luff the jib almost continuously.



In order to reduce this wastage of power as much as possible many cranes are now fitted with balanced jibs and what is known as level-luffing gear. The balanced jib gets over the difficulty of the dead-weight of the jib, and the level-luffing gear counteracts the effect of the load. It does this by making the crane hook remain always at the same height above the ground whilst the jib is being luffed. As a result the luffing motor only has to overcome friction, and therefore it can be of much lower power than would be necessary with an ordinary crane. Also it makes for safer handling of loads, as the crane driver can move a load with a much clearer idea of its path when it follows a horizontal course instead of a constantly varying one.

One of the simplest level-luffing systems for incorporation in a Meccano model is the Toplis, which is reproduced in the Meccano construction shown in Fig. 1.

In order to make the principle and operation of the mechanism quite clear we also show in Fig. 2 a line drawing of the layout of the level-luffing gear arrangement. The hoisting rope passes up from the hoist barrel to a pulley in the superstructure head B. From here it passes round one of the pulleys at the jib head A, then back round the remaining pulley at B, and finally is taken over the second pulley at A, and so down to the load.

Now point B is at such a distance above the jib pivot that when the jib head A rises through a distance of 3 in. for example, the distance AB decreases by 1 in. Owing to the fact that there are three falls of the hoisting rope passing between A and B however, the shortening of the distance AB by 1 in. means that the end of the rope to which the hook is attached is paid out 3 in. Hence the load remains at the same height above the ground throughout the entire luffing range.

In a large crane, handling very heavy loads, the saving in power consumption through this feature is quite considerable.

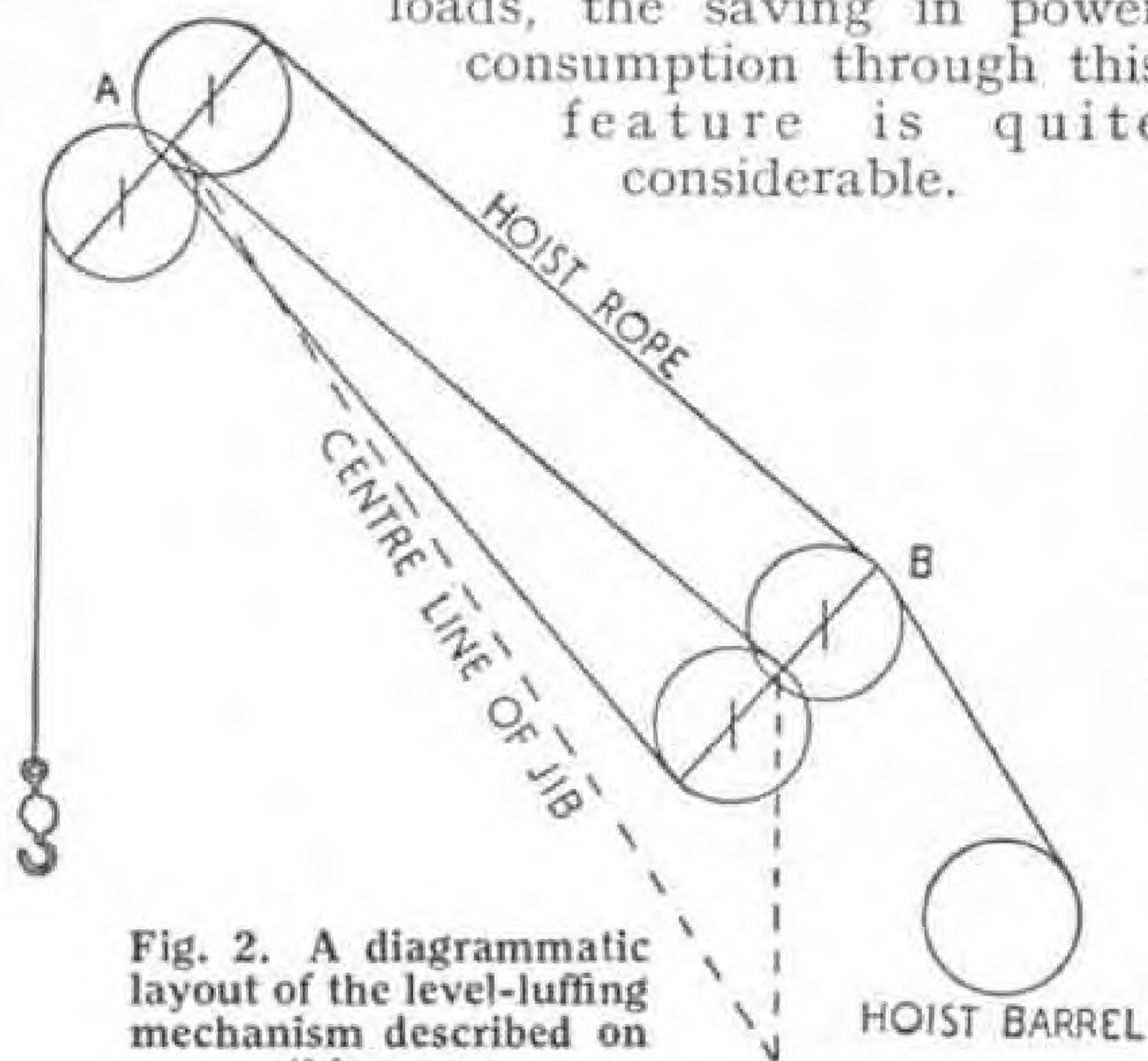


Fig. 2. A diagrammatic layout of the level-luffing mechanism described on this page.

A Meccano Engraving Lathe

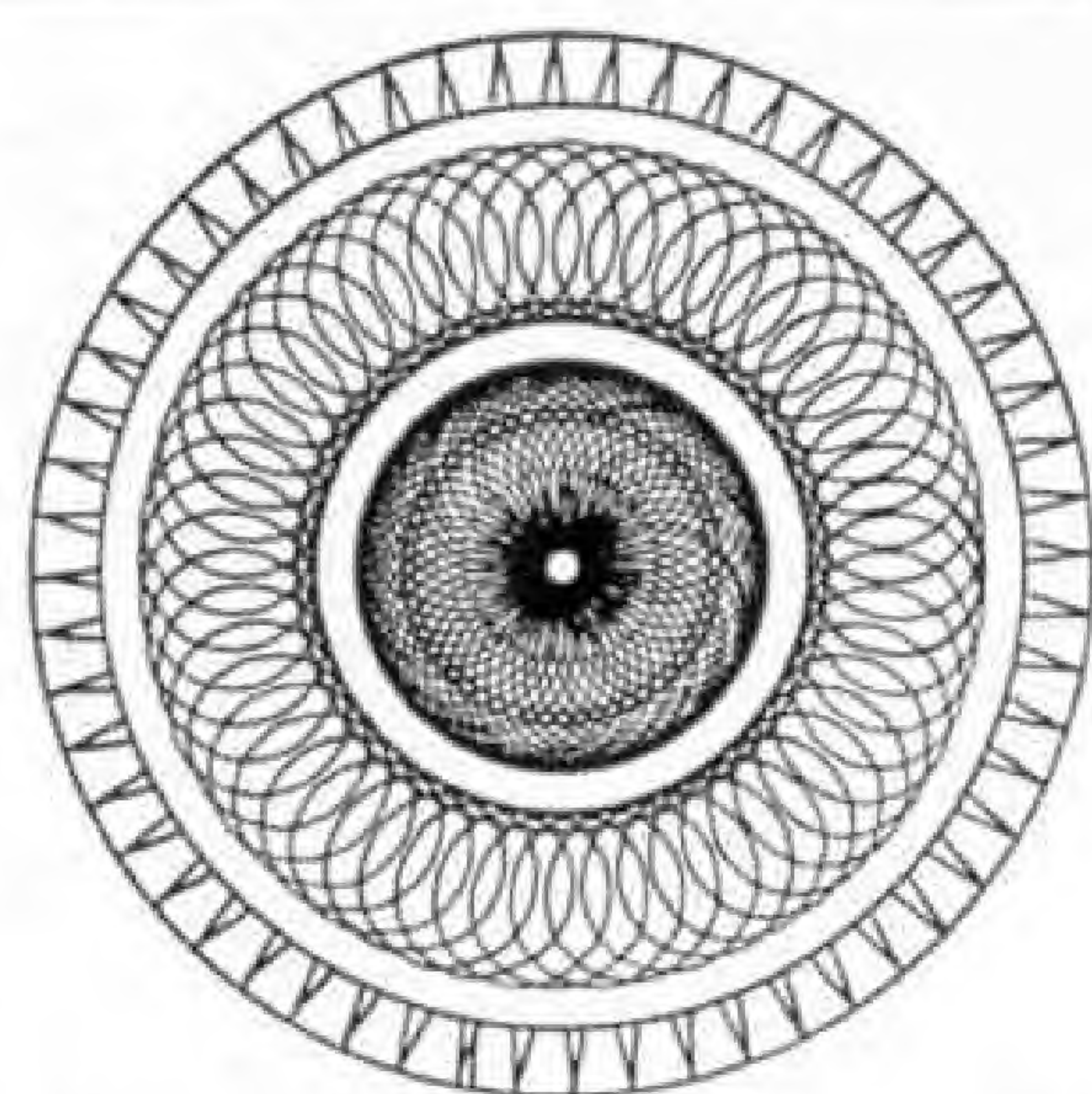
M.M. Reader's Attractive Model

MOST readers of the *M.M.* will be familiar with the Meccanograph, a designing machine built from Meccano parts with which beautiful symmetrical patterns can be produced. The Meccanograph has been one of the most popular of all models for over 30 years, and thousands have been built by boys all over the world.

There are, however, various other forms of designing machines, and one that has come to our notice recently is an engraving lathe planned and built by Mr. B. Minister, St. Leonards-on-Sea.

type of designs it produces.

It is built on the lines of a lathe, and its designs are produced on paper, metal or wood fixed to a designing board that takes



A design produced on the Engraving Machine. Notice the indexed spacing ringing the circumference of the design.

the place of a face-plate in an ordinary lathe. It produces some of its designs by drawing complete circles of varying diameters, at any point off centre or on the centre of the designing board. Any number of such circles may be used to build up a variety of patterns, one circle overlapping the other. Examples of completed designs are reproduced on this and the opposite page.

The machine consists of a stoutly-built bed, at one end of which is the head that carries the designing board 1, and mounted on the bed is a travelling carriage that supports

the pen or engraving tool. The carriage is rather like the compound slide rest of an engineer's lathe, and it is arranged so that it can move both along the bed to or from the designing board, and also across the bed. Means are provided for varying the cross travel of the tool holder as required, and with these different motions, which can be operated either independently or in combination, a very wide variety of fascinating designs can be produced.

For some designs, such as one made up of small circles overlapping each other, the face-plate does not revolve continuously but is rotated intermittently through a few degrees by means of a special indexing or stepping arrangement. This consists of a

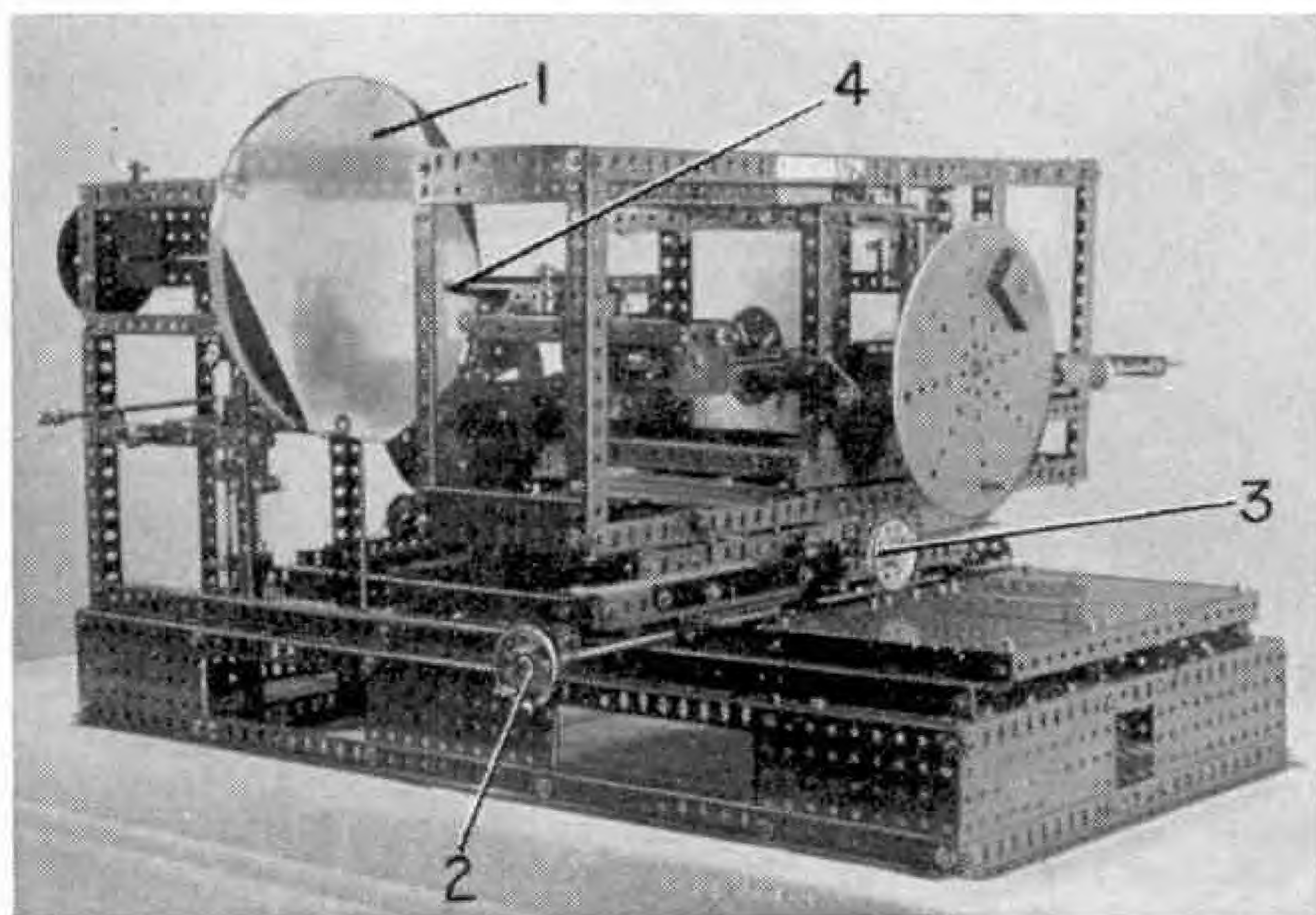
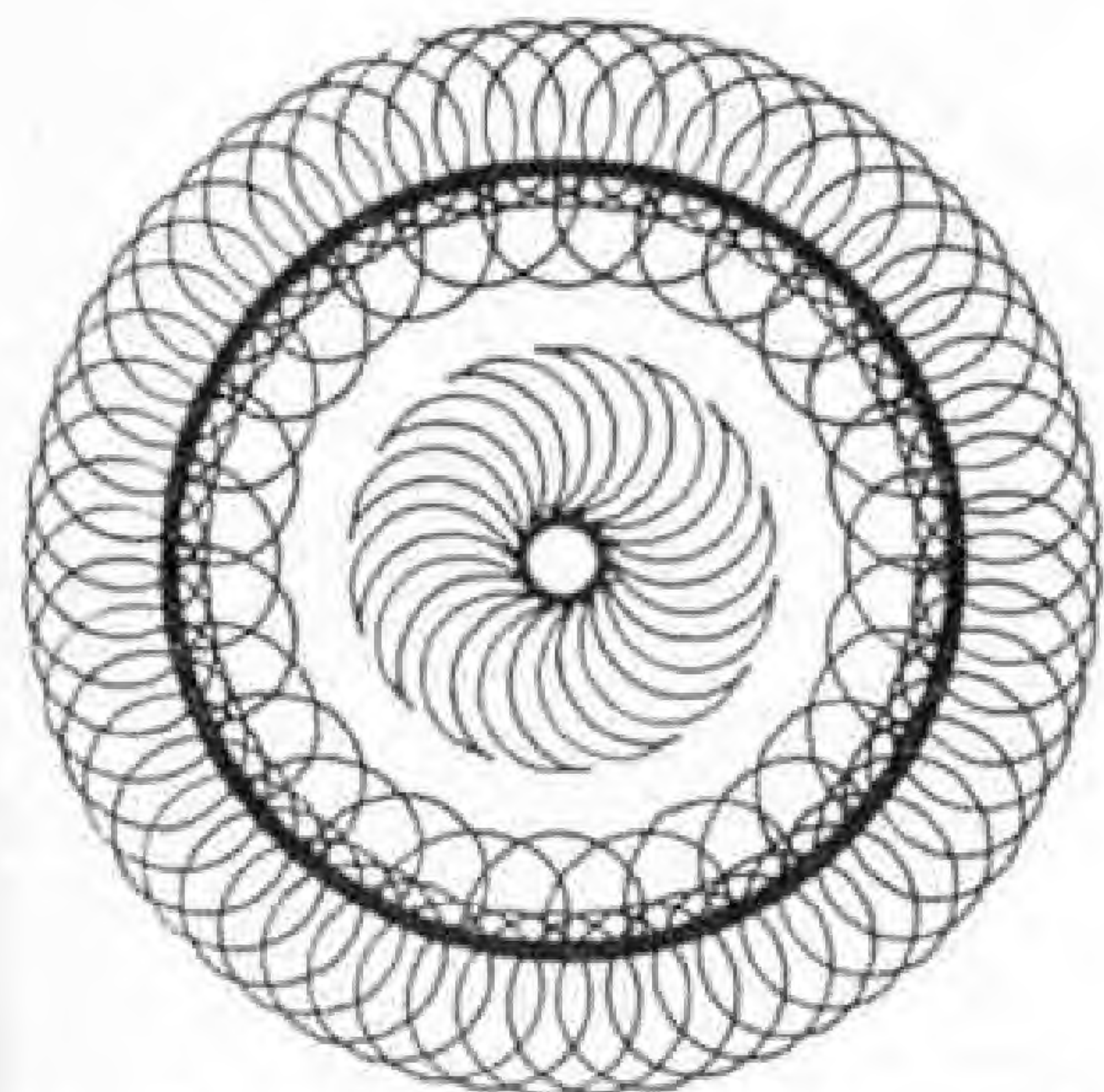


Fig. 1. When fitted with an engraving tool this machine can be used for engraving decorative designs on metal. By substituting a ball pen for the engraver, however, beautiful designs can be drawn on paper. The machine is the work of B. Minister, St. Leonards-on-Sea.



Another example of a design made on the machine.

The principle of this machine is in certain respects similar to that of the Meccanograph, but it differs considerably in its construction, its purpose, and in the

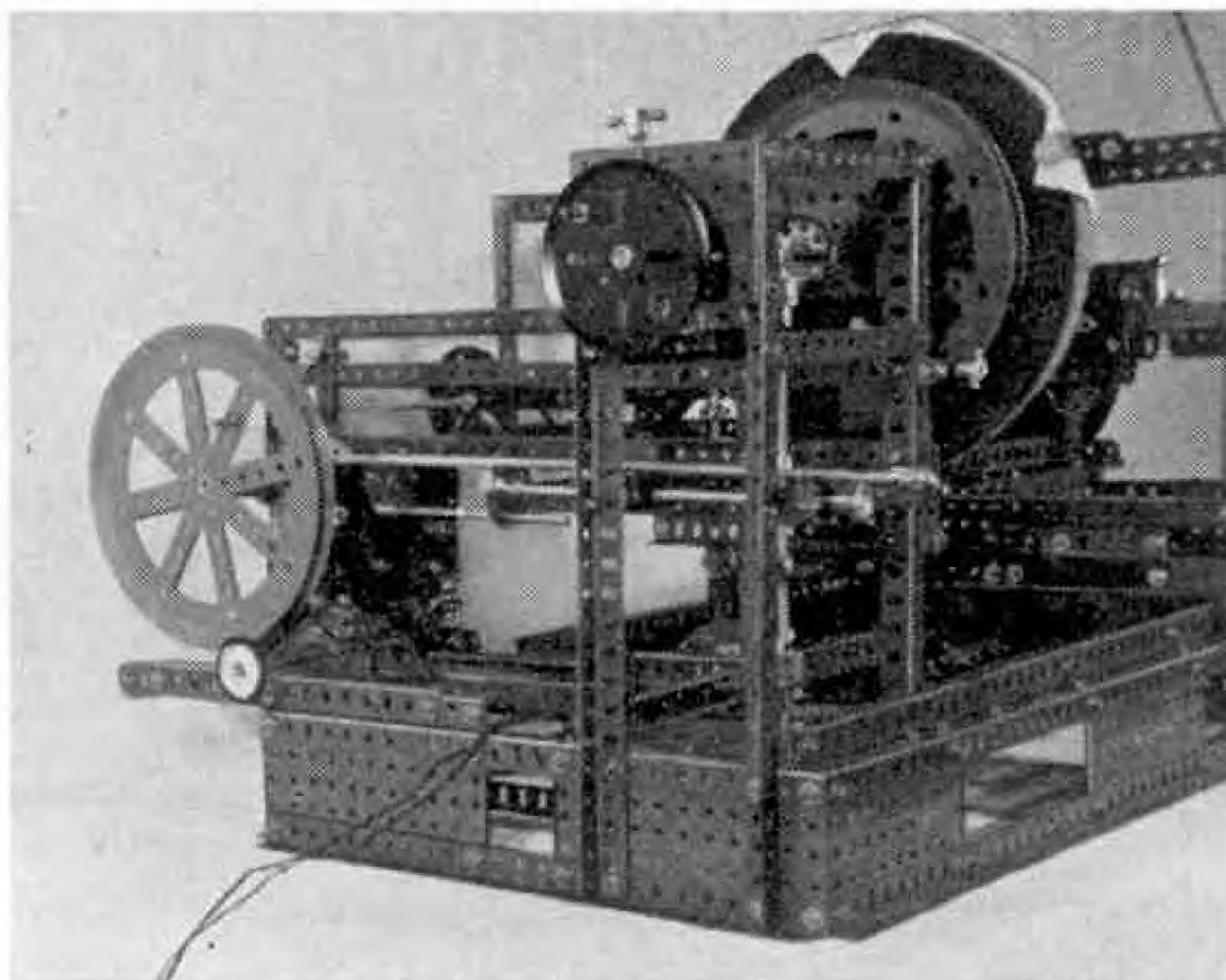
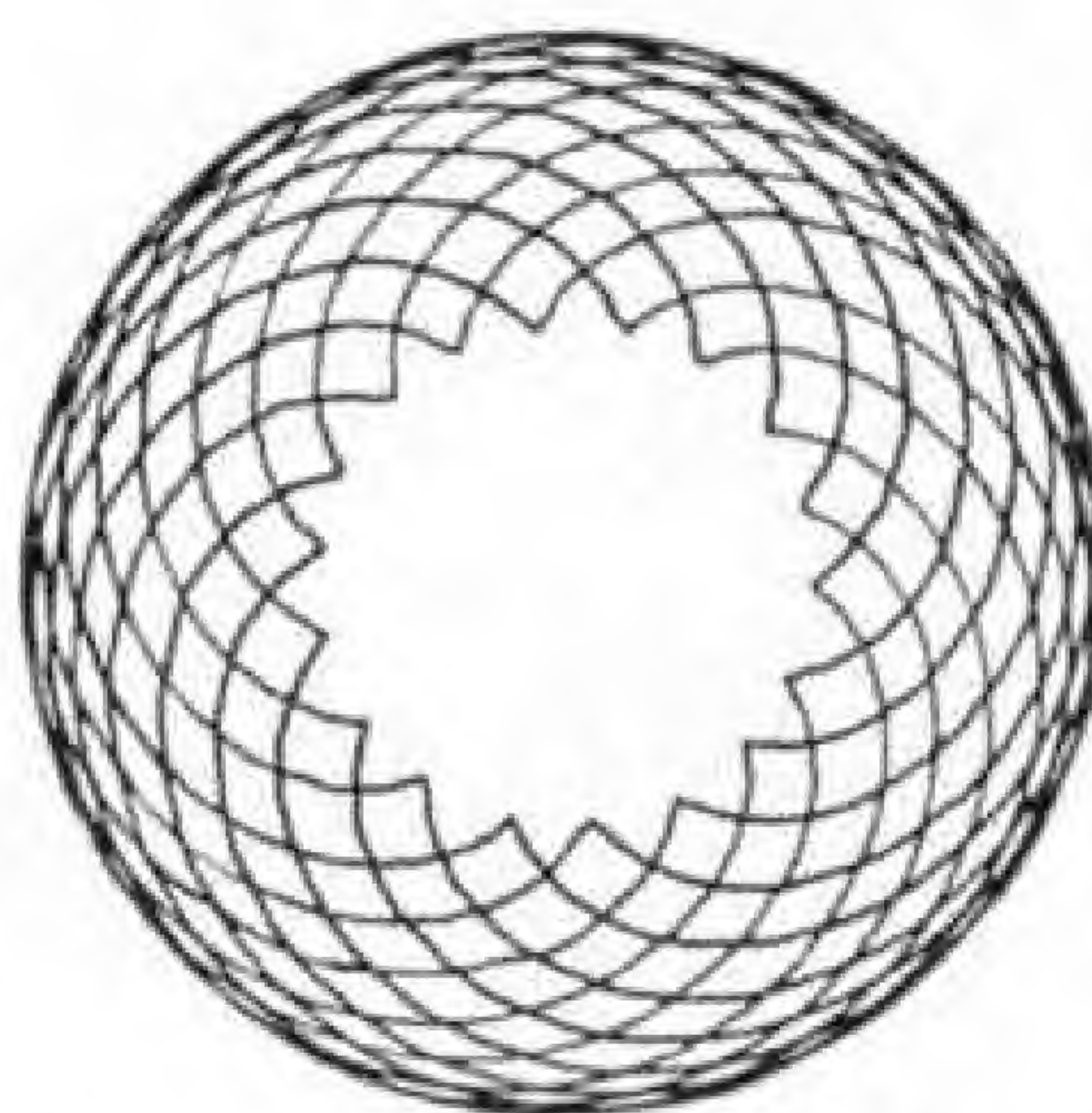


Fig. 2. Left-hand end of the machine showing the extending drive from the motor to the gears of the lathe head. The 3 in. Pulley, with handle, enables the design board to be turned by hand when required to ring round a pattern.

Gear or Sprocket and a Pawl that serves as a ratchet arrangement and enables a complete revolution to be evenly and accurately divided, the number of divisions depending on the number of teeth on the Gear or Sprocket used. For example, when using a 56-tooth Sprocket the circle circumference may be split into 56 divisions, so that small circles drawn by the pencil held in the revolving head of the carriage can be overlapped 56 times to form one complete round of the design. Further, by dividing 56 by 2, 4, 8, 7, etc. an individual circle can be worked on the faceplate 28, 14, 7 or 8 times as desired.

For other work the face-plate is allowed to turn, and this motion, combined with the motions of the revolving and oscillating carriage used together or independently, builds up designs more like those produced on the standard Meccanograph.

A machine of this kind has many possibilities apart from its use for producing designs on paper. By fixing an electric engraving tool to



A design suitable for the back of a watch case.

the carriage in place of the pencil, metal can be engraved with patterns such as those seen on watch and cigarette cases. Another alternative is poker work on wood, which can be done with an electrically-heated needle in the tool holder. Of course, for these purposes it is necessary to build a sturdy machine, and in this respect Meccano proved fully satisfactory.

The base of the machine measures $24\frac{1}{2}'' \times 12\frac{1}{2}''$ and is built up from Angle Girders and is well braced. On it is mounted the compound slide rest. The slide rest can be moved to or from the face-plate 1, which is a circle of wood fixed to a 6" Pulley, by turning the handwheel formed by a $1\frac{1}{2}''$ Pulley 3 (Fig. 1) and across the face-plate by operating the handwheel 2.

Mounted on the slide rest is an oscillating carriage, which travels from side to side on rails and is driven through an eccentric or other suitable crank arrangement from the main Motor. The holder for the pen 4, which is mounted on the oscillating carriage, is given a rotary movement by means of cranks, and the arrangement is such that the radii of the movement can be varied. In order to

(Continued on page 380)

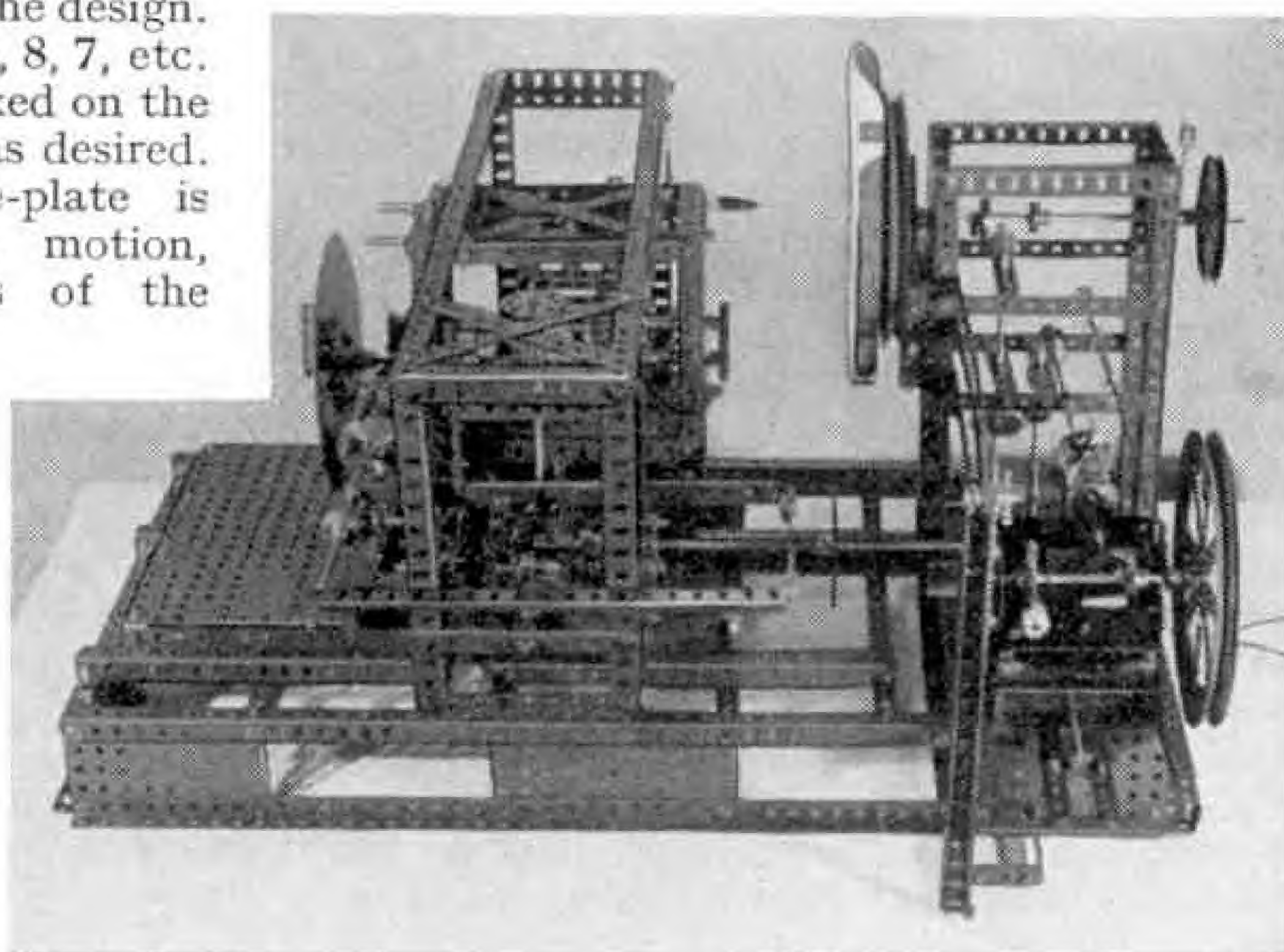


Fig. 3. A rear view of the Engraving Machine.

HORNBY RAILWAY COMPANY

By the Secretary

It is probably safe to say that no miniature railway layout remains in its original state for very long. This is especially so with Hornby-Dublo, which provides its owners with splendid possibilities of building up a realistic system. Once the Dublo owner has become used to the management of his train on the simple track provided in the Set he begins with, he then looks round for ways of building up the layout to give more scope for interesting train operations. Space restrictions there may be, but as Hornby-Dublo allows a reasonable system to be built up in a fairly confined area it is practically always easy to develop the original oval into something that is far more exciting.

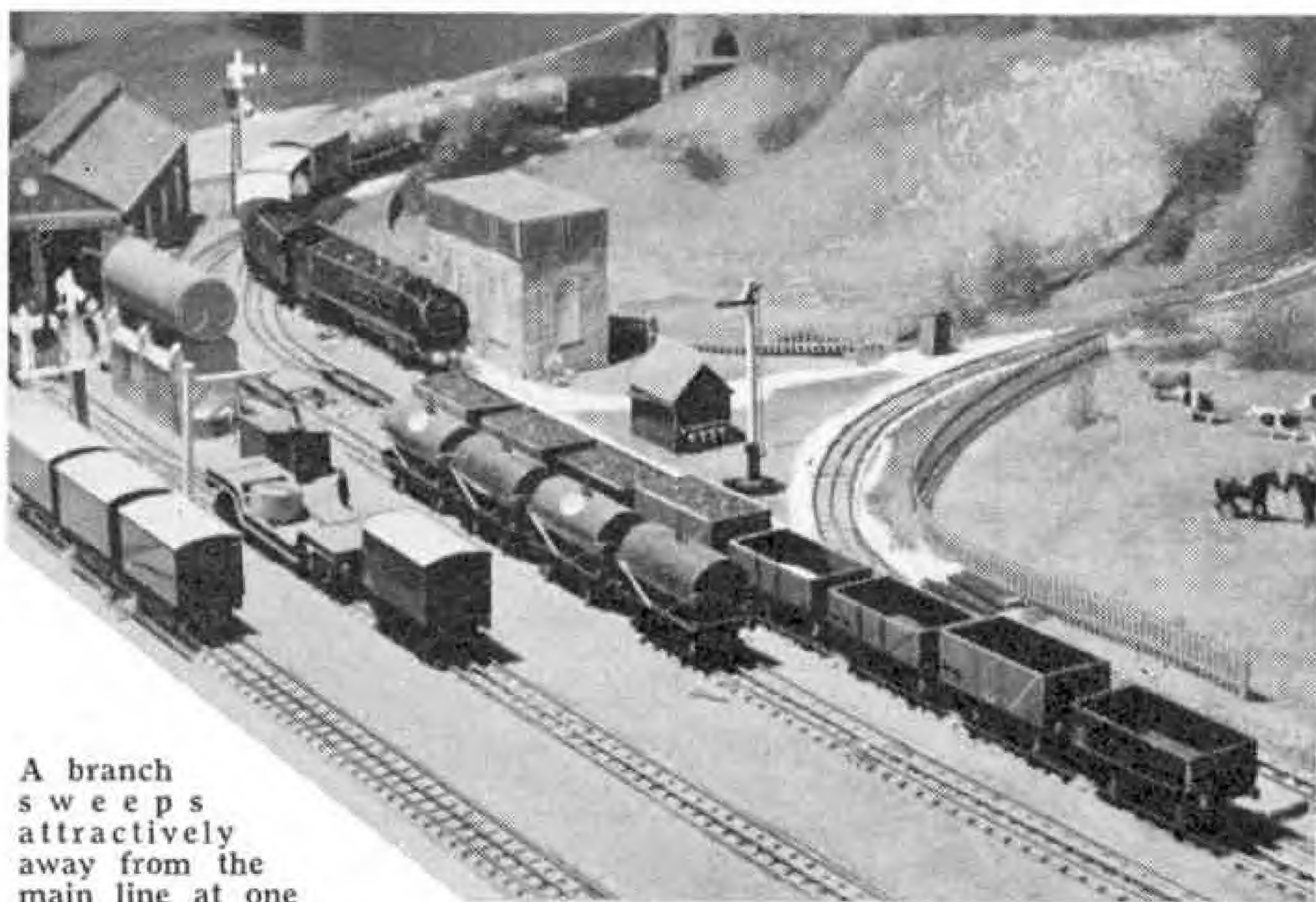
This building up of a Hornby-Dublo railway can be really enjoyable. It is good fun to try out different layouts and to see how these affect the working of the trains, and while enjoying this the railway owner begins to acquire the "know-how" that afterwards he uses instinctively in the organisation and running of the system when it reaches a more final form.

Although such a railway as I have in mind is probably set out on a baseboard, even during the earlier stages of its existence, and various accessories such as Stations, Signals and so on may be in use, as a rule little is done at first in the way of what we may term lineside developments. When a track layout is being changed frequently there is not a great deal of opportunity to arrange everything very elaborate in the way of miniature countryside. But a certain amount can be done with buildings or other items that are self-contained, and can be moved about

It's Fun to Build Up a Layout

according to requirements, and although scenic schemes are not usually embarked on at this stage, they can be developed later and will give all the more pleasure when they are fitted in with a layout already known to be successful in operation.

The illustration on this page shows a Hornby-Dublo system where the development of track and lineside to date has been fairly rapid, but has been carried out in well-considered stages. To a certain



A branch sweeps attractively away from the main line at one corner of the Hornby-Dublo layout of Mr. G. S. Langridge and his two sons.

extent this railway is a joint project. Mr. G. S. Langridge, of Bristol, has been the prime mover in the installation and building up of the line, and in operating it he is now aided by his two sons, Roland and Philip. The former helps to run the trains and devise new services, layout modifications and so on; the latter acts as a Running Inspector and is ever on the look-out for the odd wheel off the track!

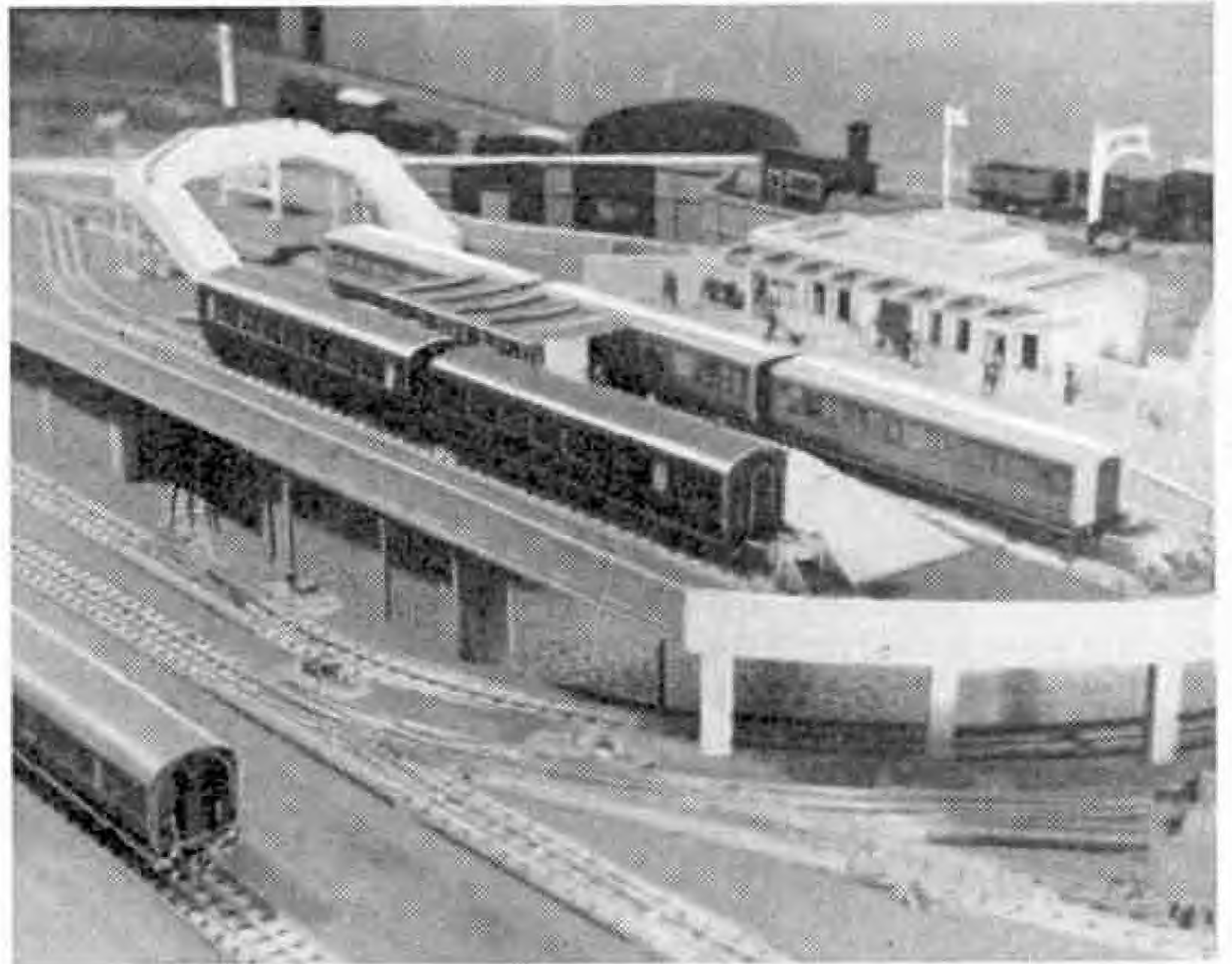
The system is arranged on a raised baseboard 11 ft. by 4 ft. It takes the form of an oval with various sidings, and at the end of the layout, as shown in the picture, there is an "S"-shaped return loop. This is arranged in a most convincing manner, swinging away from the main track and rounding a very natural-looking hill made up of painted felt placed over an irregular

wooden framework. Some of the present accessories, buildings, etc., have been assembled at home, while fencing and some bushes and trees also have been fabricated.

Further extensions are in prospect, but Mr. Langridge wisely keeps in check to some extent his boys' enthusiasm, and indeed his own. He does this to allow for the gradual development of the system and the collection of rolling stock or accessories piece by piece, which he thinks more satisfactory than getting everything required in one swoop. His plan certainly means that all connected with the railway appreciate extensions and additions to the full, and extract the utmost enjoyment from watching a railway grow, always a delightful occupation.

As is often the case, the working of this railway is influenced by the real traffic conditions in the particular area where it is situated. For this reason a wide variety of rolling stock, both goods and passenger, is in use and this makes operation of the line a really enjoyable business.

A similarly compact system where the accent has been on engineering or structural working rather than on the development of scenery is that shown in the two illustrations on this page. This is the work of Mr. P. J. Howes,



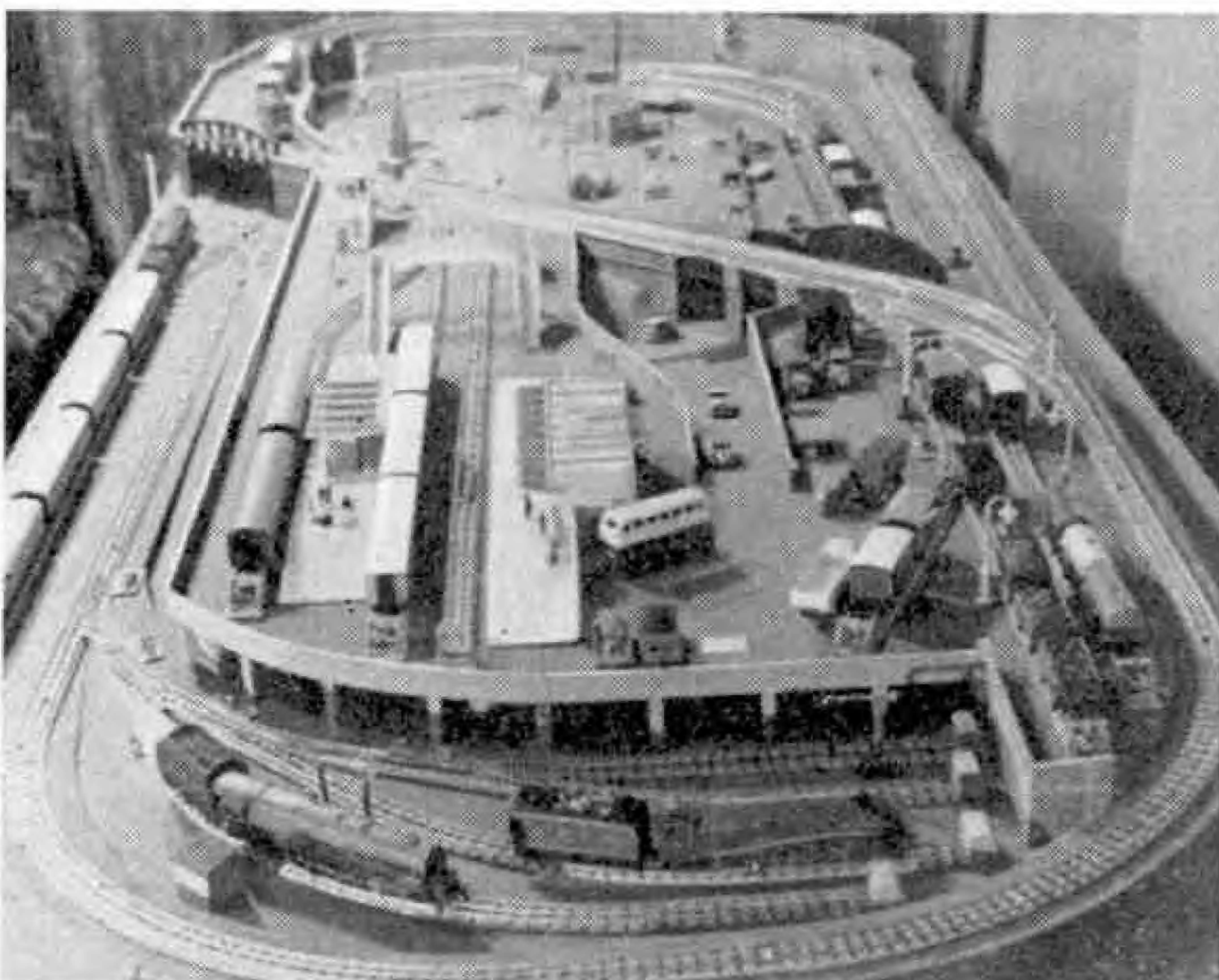
The high and low level tracks on the layout of Mr. P. J. Howes, are well shown in this picture. The diverging low level line on the left is seen burrowing under the station yard by means of a subway.

of Thornton Heath, who within the limits of a baseboard 10 ft. by 4 ft. has devised an ingenious system of avoiding lines, concealed return loops and two-level construction. This too has been built up gradually, by Mr. Howes and his son, an H.R.C. member, both of whom have been keen *M.M.* readers for years.

As is usual where continuous running is required, the main line is an oval, or nearly so. One circuit is at normal level, but there is another, seen in the foreground in the lower picture, that runs uphill to the high level, crosses the board diagonally and then descends again to the low level.

The station on the upper track level is a passenger terminus and there are corresponding goods sidings. The approach road to station and goods yard climbs up from the lower level, and serves both in an attractive and realistic manner. This is an excellent feature. The road approach to a station is often neglected on layouts where the stations are placed at more than one level.

The position of the locomotive sidings, as shown in the lower illustration, provides another realistic touch. The various roads are fitted in between two of the running tracks, just as they frequently are in real practice.



An aerial view of the whole system. The high level station and goods yard have a realistic road approach that rises from the lower baseboard level.

Road Motors for Hornby Railways

THE vans and wagons of real railways are meant to carry real loads. That is very obvious, you will say, but I wonder if *all* owners of Hornby Gauge 0 Railways follow this practice on their layouts. If they don't, they miss a lot of fun.

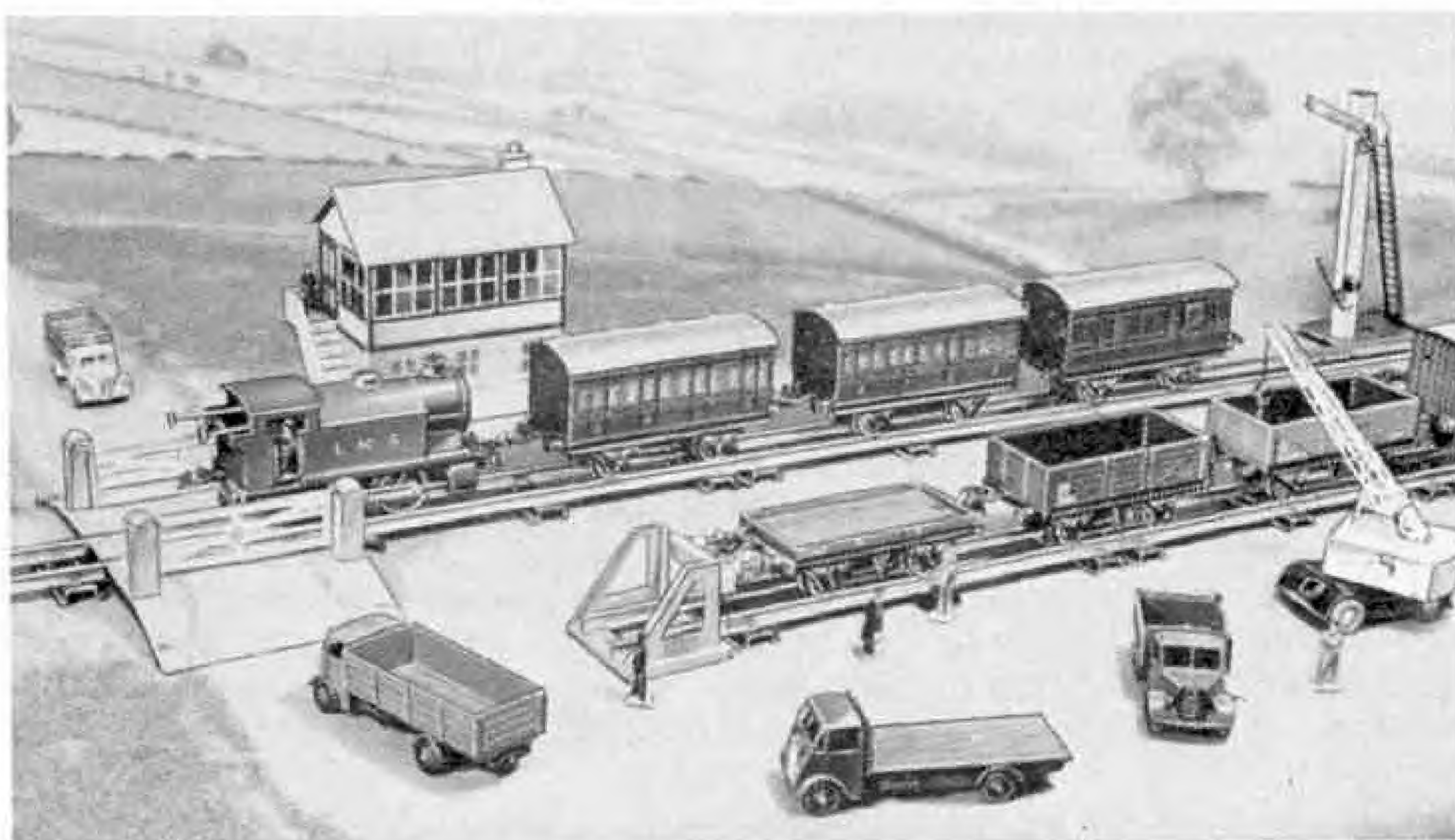
Hornby Gauge 0 trains are ideal for this purpose, for the goods Wagons are large enough to carry quite a number of miscellaneous articles and the goods Vans have sliding doors that allow them to be loaded easily. But take care not to pack a Van too tightly with a collection of odd-shaped little articles; otherwise there may be difficulty in getting them out again.

Nimble fingers are a great advantage when unloading Vans, but those who are not handy in this respect need not forgo carrying loads in them, as they can always use a short length of wire with a curly end to coax little packages out on to the platform.

On some systems the fun ends with the handling of goods by rail, but most Hornby enthusiasts widen the scope of their operations and arrange for the various items of freight to be conveyed by road. Collection and delivery is an important part of transport service, and on a Hornby layout it is easy to build up a suitable fleet of lorries, etc., to form a "*Road Motor Department*," by introducing Dinky Toys, which are available in great variety. You are all familiar with the various Guy vehicles, the Articulated Lorry, and the Bedford and Leyland Wagons, all of which fit in well with any Hornby Gauge 0 goods yard and road traffic schemes. A more recent addition is the popular Electrical Articulated Lorry, which is specially suitable as it is finished in British Railways livery.

If only a single one of the vehicles mentioned is available it can be kept busy,

and on almost any layout there will be plenty of work for a whole fleet! When there is more than one operator concerned with the railway, the organisation and running of the road vehicles makes a job that the younger members invariably welcome. They should be encouraged to "drive" safely, to see that their loads are secure, and to take particular care when bringing their vehicles into position in the Goods Yard either alongside railway wagons or at the Goods Platform for loading or unloading. Careful driving is specially necessary when a vehicle has a trailer attached. Where space permits, the



Dinky Toys motor vehicles at work on a Hornby Gauge 0 layout. The Coles Mobile Crane is ideal for loading and unloading open Wagons and Flat Trucks.

various road motors used for railway purposes can be accommodated in a miniature garage all to themselves and most enthusiasts will not find it difficult to provide a suitable building.

In the goods yard itself the Coles Mobile Crane is a most useful piece of equipment, as it can be moved about to deal with loads in different places. In addition, for the more important centres there is the recently-introduced Goods Yard Crane, with its hoisting, slewing and jib raising movements, which is suitable for heavy lifts.

Readers will find uses for various other Dinky Toys round and about their goods yards or railways generally. The B.E.V. Electric Truck, for instance, can be quite useful for shifting loads within the limits of the goods yard.

Engine Changing in Hornby-Dublo

Skilled Operations at Junctions

ALL of us like to watch the engine changing operations that are carried out at many big junction stations, such as York and Carlisle, and it is only natural

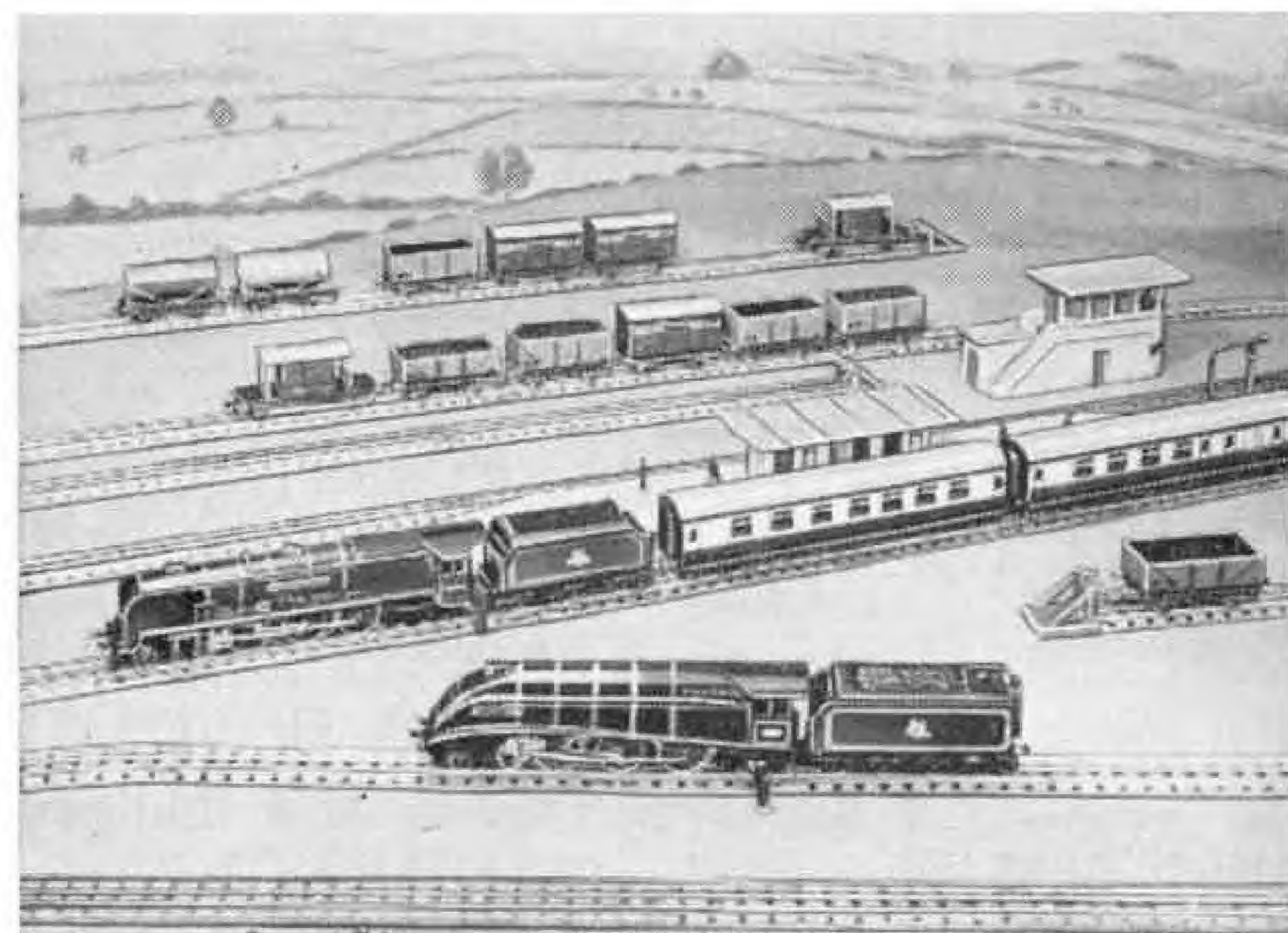
that slick engine changes are possible. For this we must have an Uncoupling Rail in the main line or the platform track where the train will arrive. It should be so situated

that when the train comes to a stop the couplings between the engine tender and the first coach are just beyond the end of the uncoupling ramp. With the latter then raised to the operating position, the engine is backed up *ever so slightly*, and the couplings are disengaged almost without moving the train! A gentle hand on the Controller indeed produces very satisfying results.

Once the couplings have separated, the engine can be driven away and disposed of. The uncoupling ramp is put out of action and the engine that is to take over is brought from its siding and then

backed slowly on to the train.

On the layout shown on this page engine changing operations are regularly performed. Indeed, this system has been designed specially to allow this and other station operations to be carried out readily.



This Hornby-Dublo railway scene suggests engine changing operations such as are described in this article. The train has arrived behind Duchess of Montrose, while Silver King is waiting on the siding to take the train on.

that we should want to do similar engine changing in Hornby-Dublo.

Engine changing on a Hornby-Dublo layout will depend to a certain extent on the track details at the station where it is scheduled to take place. Isolating arrangements of course will be necessary, so that each engine can be moved separately as required. There may be several sidings adjacent to the main line, near where the engine changing is to be made, as in the diagram on the right, and if these are provided for by means of the new Isolating Switch Points, described last month, the arrangements are simple enough. The waiting engine just stands in an isolated siding until the engine that it is to replace has come off the train and backed into another road. Then the engine that is taking over can be moved out to the main line and quickly coupled up.

Often the Hornby-Dublo operator is engine driver and signaller at the same time, so that with practice some

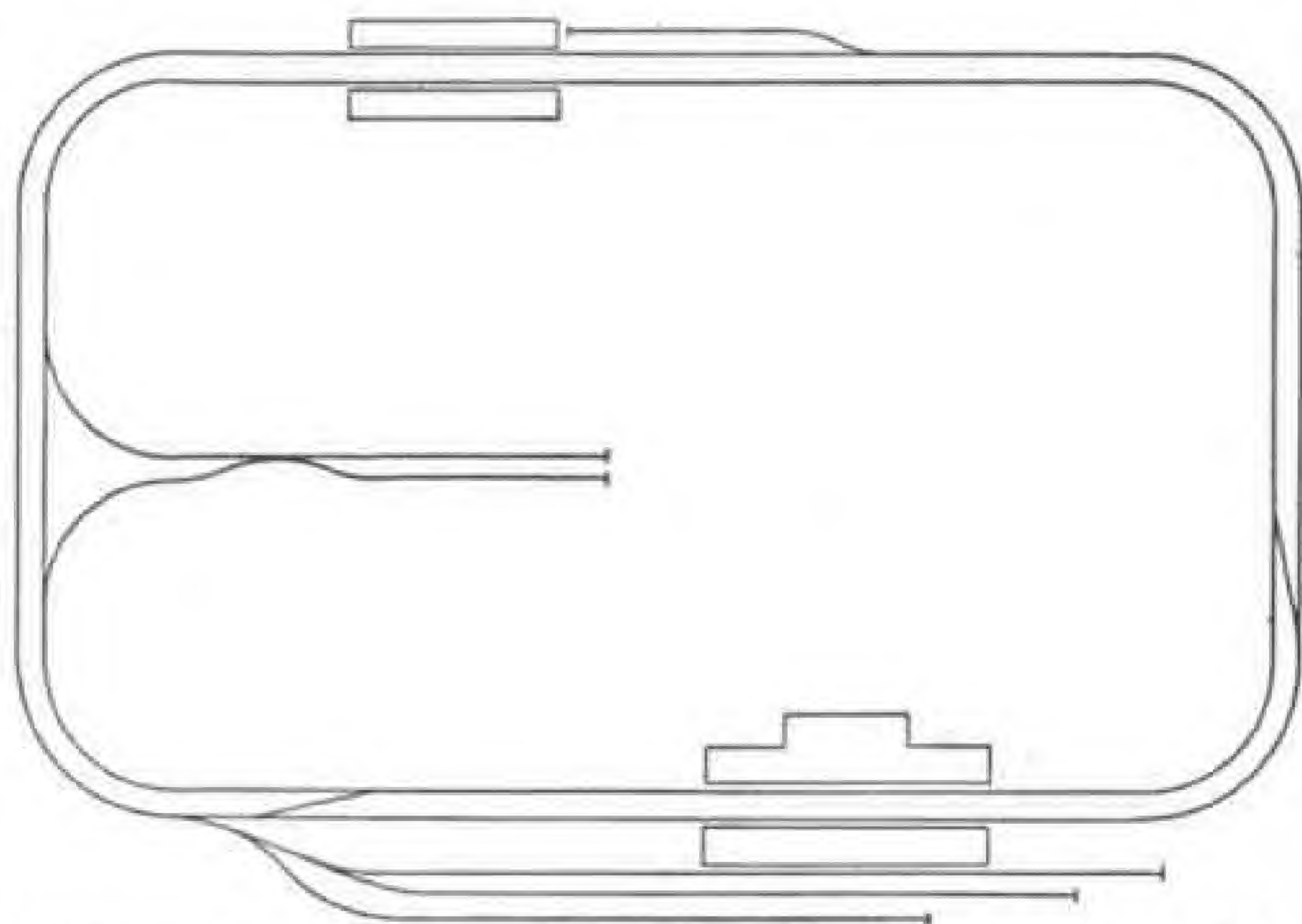


Diagram of the layout of Mr. R. Beall, Nottingham, on which a feature is made of station working, including engine changing at appropriate times.

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WRIGHT'S STAMP SHOP (M.45), CANTERBURY, Kent.
(Est. 54 years).

Stamp Collectors' Corner

By F. E. Metcalfe

CANADIAN WILD LIFE

PROBABLY no country in the world is forging ahead economically so quickly as Canada, not even the U.S.A., as can be seen by the fact that the dollar of the great Dominion can now see over the head of the

dollar of the neighbouring republic. There have been rapid advances before; in our own country for instance, in the nineteenth century. But unlike Great Britain, Canada realises that there are other things that matter besides mere material wealth, and steps are being taken to preserve these other things while there is yet time. As publicity is needed to further the objects in view, postage stamps of course are being enlisted for

the purpose, and what could do the job better?

Canada naturally is proud of its inimitable wild life, and is anxious to preserve it as far as possible. In the past extensive trapping has taken a great toll, and to protect that which remains an annual National Wildlife Week has been instituted. The Canadian Post Office, anxious to help, not only produced a set of three wild life stamps on 1st April, but proposes to issue three each year for the same purpose. The stamps are only small in size, but magnificent designs have been selected, as can be seen from the illustrations.

In a circular the Canadian Postmaster General announced that his Department would issue on 1st April three new design commemorative issue postage stamps that would depict commonly known wild animals of Canada, the date of issue to coincide as nearly as possible with National Wildlife Week. The 2c. postage stamp was to display the Polar Bear—just suppose we had polar bears to protect!—the 3c. a moose, and the 4c. a bighorn sheep. Stamps designed to display other wild animals of Canada will be issued in subsequent years—and think of all those interesting animals still to be portrayed!

The design of the 2c. was created by John Crosly, an artist of the National Museum of Canada, Ottawa. The designs of the other two were by Emanuel Hahn, a sculptor of Toronto. As usual the Canadian Bank Note Co. were engravers and printers.

The Post Office has stated that it wishes to join those who are striving to increase the interest of the Canadian public in the importance of its wild life resources, wild life which was so abundant once upon a time, but which was depleted through a lack of appreciation. The P.O. went on to say that it hopes that the Wildlife series of postage stamps will emphasise the importance of securing and restoring those resources, not just for their economic value, but also because they are a constant source of pleasure to thousands in every walk

of life. Of course they are, but who would have thought that a Post Office had any concern for anything but making inordinate profit? Yes, Canada is a great country. How could it be otherwise with such

public institutions?

In our own country we do not have such handsome animals as polar bears or moose, but we do have our wild cats and golden eagles—I hope no gamekeepers



read this, or they will surely get me into trouble with the Editor—which many of us would like to see protected from their human enemies. But could one imagine our Post Office finding time to issue publicity stamps to assist the cause of protection?

There is just one small point. I do think that the beaver should have been the first animal to be depicted, for no animal so surely pictures Canada to us so much as this intelligent rodent. A wonderful living picture has been made about this animal. See it if you can. No doubt we'll get a beaver next year.

I suppose everyone knows all there is to know about polar bears, that they grow up to nine feet long and can weigh up to half a ton, that they live largely on seals and can swim superbly. And about moose also. Here we have an animal slightly larger than the elk, with magnificent horns, which is generally as much as seven feet high and also can weigh up to half a ton. It is ungainly in appearance, but that belies its ability to get over the ground, which it can do with the speed of an express train. It is also said to be grand eating. Alas, that is why it was disappearing so fast, but the protection it is getting today probably means that it is quite safe from extinction.

The bighorn sheep is not so well known. The Canadian variety lives in the Rocky Mountains, and it certainly is well named. Its agility is something to marvel at, and its iron grey colour is more like that of a goat than a sheep. A fine animal indeed, and well worth all the protection it can be given.

Besides illustrating the three Wildlife stamps I cannot resist asking the Editor to find room for one depicting geese in flight—Canada is a wonderful country for these fascinating birds—and another showing the cause of all the trouble, pelet collecting. Notice the Indian pegging out the skins. All five stamps are easily available, and for mere coppers if collected in a used state, but be sure and get copies that have light postmarks which do not blot out any of the designs.

What will Canada have for us next year? One thing is certain, this year's set will be popular with all classes of collectors, and one cannot help but wish that our own country would produce stamps with such interesting designs. But this is like wishing for the Moon.



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A fine packet of unused British Colonials of the late reign from the Leeward Islands, new Papua and New Guinea, Dominica, Sudan, Malta, Kenya, Uganda and Tanganyika, and Morocco Agencies (Silver Wedding), sent free to all applicants for my discount Approvals enclosing 2½d. postage. Mention the Meccano Magazine.

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For other Stamp Advertisements see also pages 376 and xvi.

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500 All diff.	..	4/9
50 RUSSIA	..	2/3
25 PERSIA	..	1/6
100 F. Cols.	..	2/6
25 Vatican	..	3/-
1000 All diff.	..	10/-

G. P. KEEF — WILLINGDON — EASTBOURNE

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to every applicant for approval books. The **GIFT** contains 30 British Colonials including 8 K.G. VI mint—no Great Britain. Good discount is given and a list of 98 Gifts is sent. These can be chosen by you and vary in value according to the money sent for purchases. They include K.G. VI Silver Jubilees; ALL the Colonial Victory sets mint; and Foreign stamps. 3d. postage please.

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NEW QUEEN ELIZABETH from TRINIDAD

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Stamp Gossip

TROPICAL TRINIDAD

THE release on 20th April of a full set of KG VI designs, but with the portrait changed, came as a surprise in more ways than one. There had been talk of such a set, but the Crown Agents had been rather quiet about it. The real surprise was to find that not only were two different portraits used but, contrary to practice, they faced different ways. Apart from the change in the portrait, the stamps are mostly identical in shades with those they have replaced. While Trinidad is a popular country with collectors, I am afraid that they will be rather disappointed that the designs as well as the portrait were not changed.

BURMA PEACOCKS

A young collector has written to ask "What on earth collectors mean when they talk about Burma Peacocks?"

Well that's an easy one to answer. They are referring to stamps bearing the King's portrait in use in



Burma when the Japs invaded that country. Naturally the latter did not like the stamps they found, so they more or less obliterated the portrait by overprinting the stamps with a crudely drawn peacock. Some of these stamps are very rare, but I would like to utter a word of warning, or rather two words. First of all, be sure that any stamp you buy has a genuine overprint, and don't accept everybody's word either, for there are many forged overprints about, and not all who have copies for sale know the true from the false. Secondly, don't pay anything like full catalogue price, for they are grossly overcatalogued.

GUESS WHAT?

Within the last few months two Argentina stamps, each bearing a portrait of the late wife of President Peron, have been illustrated, and just as a little poser in the May issue I asked readers to try to see



how the stamps differed. No doubt most did spot the difference, but just in case you didn't, let me mention that the second bore the name of the lady

depicted, and on the first this name was omitted.

THE ODDEST STAMP

My idea of the oddest design, which was illustrated recently, soon brought an answer from a collector of air mail stamps, who stoutly maintains that of all the funny stamps none can touch one issued as part of a set by Mexico. The recent exhibition of Mexican art in

London gives the stamp topical significance, but I still think that if I suddenly came across that big fish shown on the St. Pierre et Miquelon stamp I would get a much bigger shock than if I came across the Mexican statue.

A TIP

Later in the year Queen Elizabeth will be visiting Australia, New Zealand, etc., and there is definite news that several

stamps will be issued to celebrate the event. Now we have already had a number of Royal Visit stamps, and because of their popularity many were bought, with the result that they can still be obtained cheaply, particularly those issued in South Africa in connection with the visit of King George VI in 1947. The forthcoming stamps will draw attention to those already referred to, and may quite likely have the effect of pushing up prices, so why not get these "Royal Visit" stamps before they become more expensive?

Incidentally, a very nice little collection can be formed of these various "Royal Visit" issues, and I am going to ask the Editor to let me deal more fully with them later on in the year. These sideline collections are getting more popular all the time.

PORTUGUESE SPECIAL ISSUES

Stamps are issued nowadays for so many different



purposes, that the term commemorative issues will no longer do. The Commonwealth Catalogue has got over this by describing all stamps issued for any specific purpose as

special issues, and I think in future I will similarly describe stamps.

I will begin by referring to the special issue released in Portugal a few months ago to commemorate the centenary of the Ministry of Public Works. It is a fine little set of four values and, as with most Portuguese stamps, used copies are cheap and readily obtainable. One value is illustrated, and isn't that football field a beauty? One almost longs for that sport to come again!

NORFOLK ISLANDS

Eternal sunshine and all the oranges you want for nothing! That is how this delectable outpost of the Commonwealth was described to me by a sailor. Anyhow the first Governor's Residence wouldn't be a very nice house to live in, even if the climate were perfect.

Norfolk Island is a Dependency of Australia, and issued its first and only set of stamps in 1947. Latterly interest has waned a bit, but perhaps the six new stamps of values 1/2d., 3/4d., 7/8d., 8 1/2d., 10d. and 5/- will do something to revive things.





Their Royal Highnesses the Princess Royal and the Duchess of Gloucester leaving the Meccano Stand at the British Industries Fair, Olympia, after inspecting the Meccano models, Hornby and Hornby-Dublo layouts and Dinky Toys included in the display. On their visit they were accompanied by Their Royal Highnesses Prince William and Prince Richard, the former of whom is seen in our illustration.

The Young Farmers' Clubs—

(Continued from page 349)

the printing of tickets and programmes, and acted as stewards in the hall.

Then there are proficiency tests in farm crafts. Practical instruction is given in milking, hedging, thatching, dry stone walling, sheep shearing, poultry trussing (including plucking), and ploughing. Tests in these seven crafts, some of which are taken in two sections, are held at public events such as agricultural shows and are open to young farmers between the ages of sixteen and twenty-five years. Certificates are awarded to the successful candidates, who may then wear a special badge if they wish to do so.

Through an exchange of members with other countries, young farmers also get a chance to travel. Many clubs send representatives to Denmark, France, Switzerland, and other parts of Europe; while headquarters is responsible for distant overseas visits to Australia, Canada, and the U.S.A.

A Meccano Engraving Lathe—

(Continued from page 371)

maintain the drive to the pen holder, irrespective of the position of the oscillating carriage, the drive from the Motor is transmitted to the pen holder through an extending drive coupling consisting of Rods sliding in the holes of Bush Wheels.

So that the Motor input drive to the gear-box will not be interrupted by the movement of the carriage, the Motor itself can be moved while actually working, by means of a rack and pinion arrangement.

The drive from the Motor to the face-plate designing board also is transmitted through sliding rods and Bush Wheels as in the drive to the oscillating carriage.

LONDON ON WHEELS

Readers will be interested to hear about two Exhibitions, already open, that have been organised by the British Transport Commission as part of the attractions in London for Coronation year visitors. One of these, entitled *London on Wheels*, is staged in the Shareholders' meeting room at Euston Station and will remain open until 29th August. It tells the story of the startling development of public travel in and from London during the 19th century.

Among the models included is a reproduction, believed to be the only one ever constructed, of London's first Horse Tram, named *The People*, of 1861. Other attractions include models of hansom cabs, horse buses, Thames steamers, railway locomotives, rolling stock and other equipment.

Two of the larger exhibits have been specially built for this occasion. One is a full-size reproduction of a third-class compartment in a Midland Railway coach of 1875. The other, also full size, shows a section of a Pullman dining car of about 1895. Railway tickets, handbills, posters, maps and prints, photographs and drawings also are displayed.

Entrance to this Exhibition is through the well-known Great Hall at Euston and up the wide stairway behind the statue of George Stephenson. The actual room in which the Exhibition is housed is historic. It was specially built for general meetings of shareholders of the former L.N.W.R. and was opened 104 years ago.

The other Exhibition, under the title *Royal Journey*, is being held at Battersea Wharf Goods Station and closes on 4th July. It includes a historic locomotive, Royal railway coaches and other relics connected with Royal travels in the 19th century.

Both Exhibitions are open from 10 a.m. to 7 p.m. on weekdays, and from 2 p.m. to 7 p.m. on Sundays, admission 1/- adults and 6d. children under 14.

From Our Readers

This page is reserved for articles from our readers. Contributions not exceeding 500 words in length are invited on any subject of which the writer has special knowledge or experience. These should be written neatly on one side of the paper only, and should be accompanied if possible by original photographs for use as illustrations. Articles published will be paid for. Statements in articles submitted are accepted as being sent in good faith, but the Editor takes no responsibility for their accuracy.

THE MARTELLO TOWERS

Along the coast of Kent and Sussex there may still be seen some of the old Martello Towers, which have stood there for a hundred and fifty years. There were originally seventy-two of these forts, which were

have taken their toll of a number. Others have been broken up, but a few have been converted into dwellings or halls of amusement, and some still stand as memorials of the days when there was risk of a hostile landing from across the Channel.

ALLAN PHILLIP (Hassocks).



A Martello Tower between Pevensey Bay and Eastbourne. Photograph by Allan Phillip, Hassocks, Sussex.

erected at the close of the eighteenth century for use in defence if Napoleon Bonaparte invaded the country.

These massive structures were built of brick, with one room on the ground floor, which was intended for the magazine, and two rooms above for the garrison. The roof was flat with a parapet four feet high, and had emplacements for three guns. The lower room had no windows and the upper rooms two narrow lancet windows, and entrance was by a door high up in the wall. The walls were seven or eight feet thick.

Similar forts had been constructed by Charles V nearly 300 years earlier along the Italian coast as a protection against smugglers, but it was in Corsica that the value of the Martello Tower for defence was first realised. In 1794 an English fleet of nine ships went to the assistance of the Corsican insurgents at Cape Martello. The shore was protected by one of these forts, and it was only after a prolonged resistance that it was reduced. Realising their strength and utility in warfare, the military authorities erected similar towers along our coast.

Fortunately it was never necessary to use the Martello Towers for their intended purpose, as Napoleon abandoned his scheme for invading Great Britain and Nelson's victory at Trafalgar made it impossible for him ever to revive it. Some years later they did find a temporary use, as the Navy for a time stationed men ashore in them to strengthen the Government forces employed in trying to prevent smuggling, and thus began the coastguard system.

Many have disappeared. The storms

LEAD WATER TANKS IN THE SCILLY ISLES

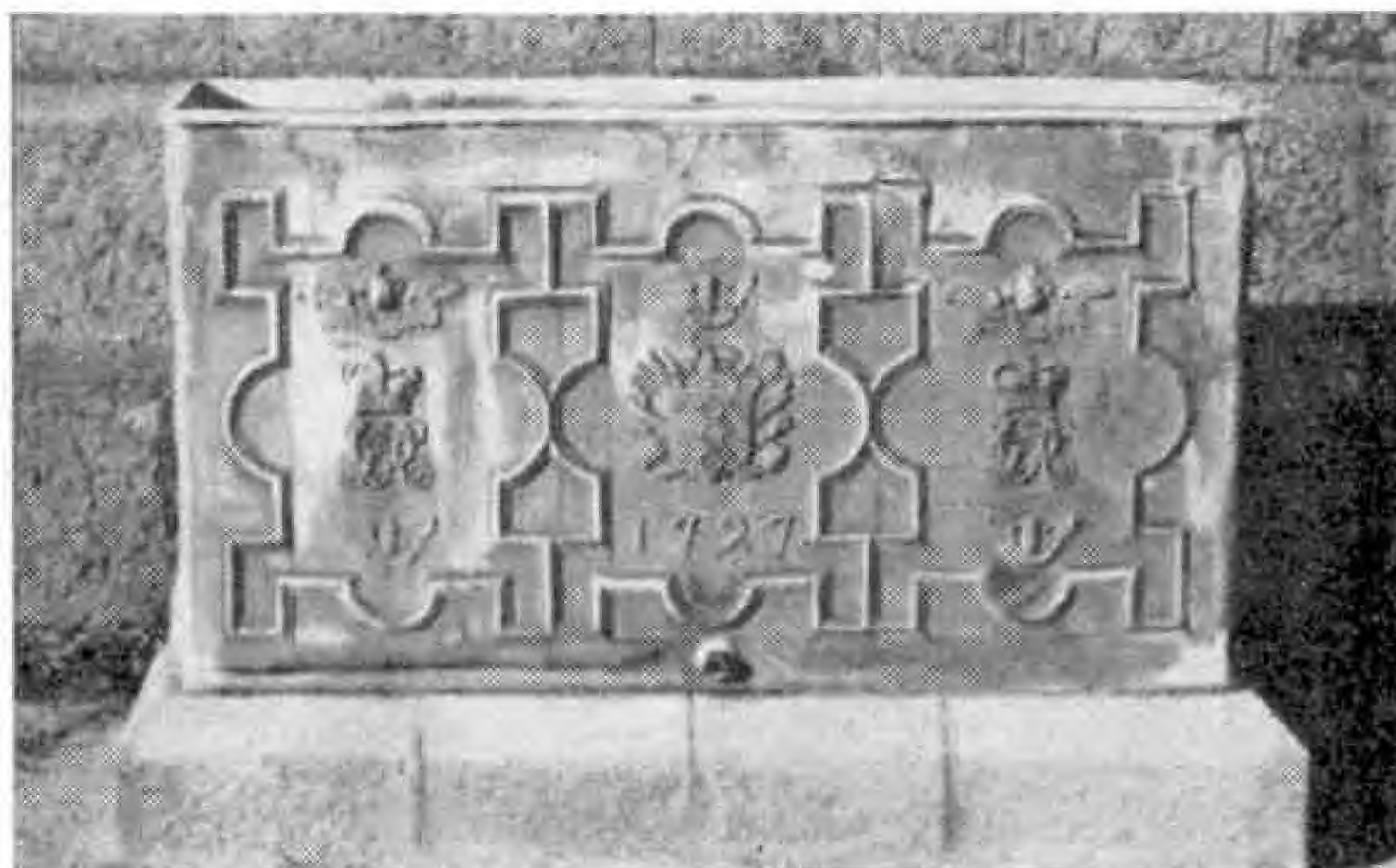
Lead has become a comparatively scarce metal during the post-war years and it is, consequently, expensive. It is used for making a large range of articles, such as water pipes, and also in the manufacture of paint.

In the 17th and 18th centuries, articles made of lead were very often cast, so that they could be given ornamental patterns on their sides. Even articles intended for utility purposes were made decorative in this way. For instance, gutters and fonts of many of our most ancient and beautiful Churches are ornamental.

The lead tank shown in the illustration on this page is one of two, each having a

similar design and bearing the Royal Arms and the date 1727. They are about five feet long, two feet wide and three feet deep, with sides roughly half-an-inch thick. Originally they belonged to the garrison at the Star Castle, on the island of St. Mary's, in the Scillies. But now they are to be seen one on each side of the entrance to St. Mary's Church on the same island.

Even if lead were again plentiful, it would not be cast into utility articles bearing decorative patterns. That art is dying out, and so these fine tanks and similar objects are becoming more valuable and worthy of preservation. A. HOLT (Manchester).



One of two lead tanks that stand at the entrance to St. Mary's Church, in the Scilly Isles. Photograph by A. Holt, Manchester.

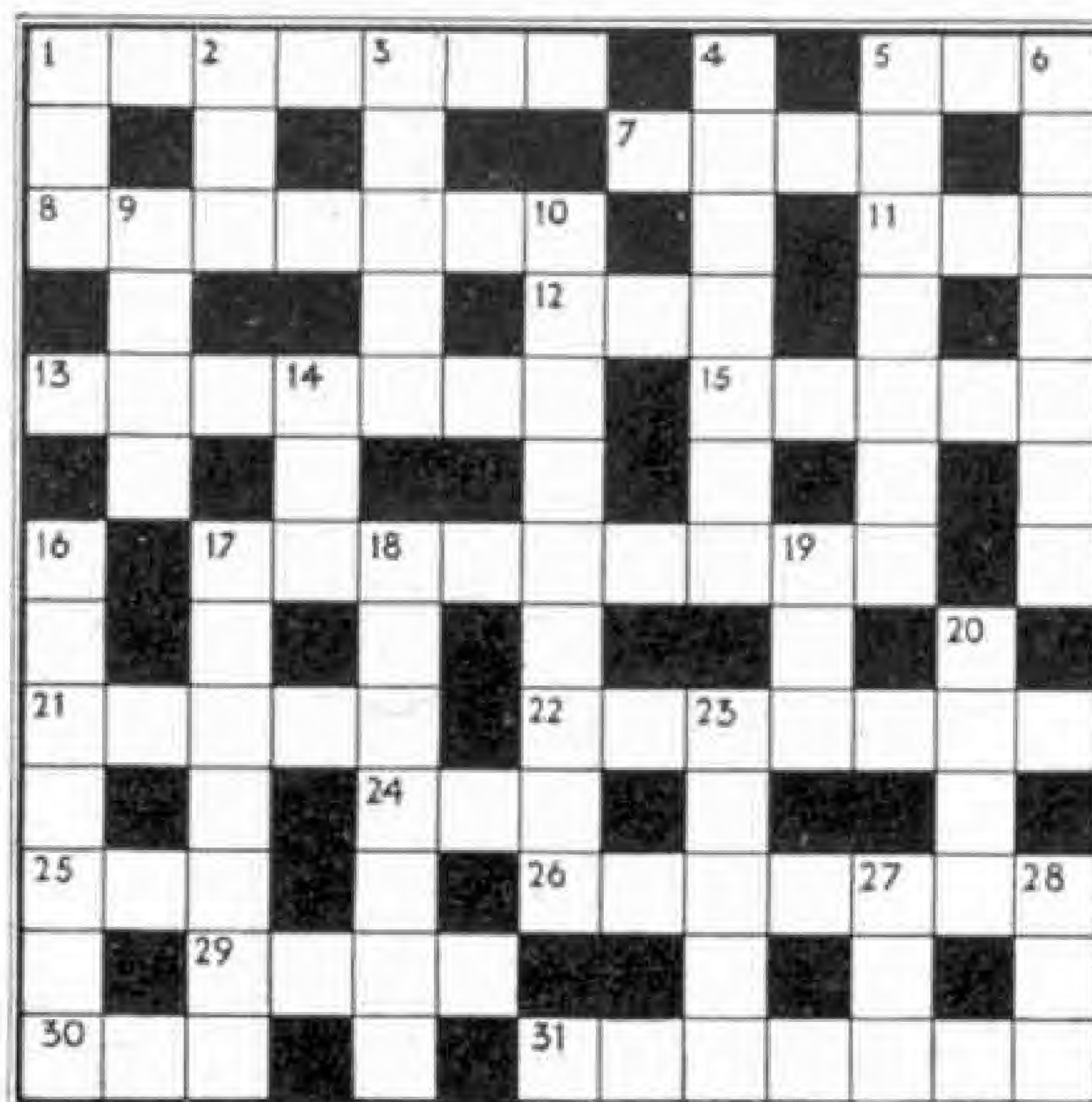
Competitions! Open To All Readers

Prize-winning entries in M.M. competitions become the property of Meccano Ltd. Unsuccessful entries in photographic, drawing and similar contests will be returned if suitable stamped addressed envelopes or wrappers are enclosed with them.

An Easy Crossword Puzzle

CLUES ACROSS

1. Rough prickly shrub
5. Animal and iron
7. Operatic air
8. Give Way
11. Vase
12. World Organisation
13. Opposition
15. Newspapers Generally
17. High flyers
21. Deputy
22. Winged insect
24. Said to be slippery
25. To fortify
26. Adherent of house of York in Wars of the Roses
29. Wicked
30. Tell
31. Mirthful



CLUES DOWN

1. Vehicle
2. Bright light
3. Bear
4. Troopship
5. Destitute People
6. Creation
9. Insist
10. Gay, flighty person
14. Girl's name
16. Supports
17. Born within sound of Bow Bells
18. Border plant
19. Higher than a King
20. Lament
23. Away from towns
27. Chemical manufacturers
28. Scottish river

This month we present another of our popular crossword puzzles. There are no traps in the clues, or alternative solutions, and every word, apart from names, can be found in a standard dictionary.

There are two sections in the competition, for Home and Overseas readers respectively, and in each prizes of 21/-, 15/- and 10/6 will be awarded for the best solutions. If necessary the judges will take neatness and

novelty into consideration when making their decisions. Do not cut out the diagram. Make a copy of it for your entry, and on the back of it write your full name, address and age.

Entries should be addressed *July Crossword, Meccano Magazine, Binns Road, Liverpool 13*. The closing date in the Home section is 31st August, and in the Overseas section, 30th November.

Historic Locomotives Contest

Most readers of the *M.M.* know many names of locomotives, including both those that are now in service on the various Regions of British Railways, and those that are of historic interest. Many of the latter are today kept as museum pieces, and this month we are giving the names of twelve of them for identification. To give the competition the interest of a puzzle we have deliberately jumbled up the letters of their names, however, and competitors are asked to sort these out so that the correct names of the engines can be read at once.

Here then are the mixed up names and all you have to do is to see what these really are.

1. NLOOCOMIOT
2. KTECRO
3. EJSPINHEO
4. YHNRE YOLEAK
5. ECMOULNIB
6. NILO
7. KCWHREDIA
8. EGNLOATSD
9. EL TCNOTNNIE
10. RPEINOE
11. YTCI FO OTURR
12. RTHEAHTC SPIKENR

When you have discovered the names write them out in order, with their numbers. Add your full name and address, and send the entry to *Historic Locomotives Contest, Meccano Magazine, Binns Road, Liverpool 13*.

Entries should reach this office on or before 31st August, except for overseas competitors, for whom the closing date is 30th November.

In this contest there are two sections, for home and overseas respectively, and in each there will be prizes of the value of 21/-, 15/- and 10/6, with consolation prizes for other good efforts. If necessary the judges will take the neatness and originality of the entries into account.

July Photographic Contest

The seventh of our 1953 series of photographic contests is a general one in which we invite readers to submit prints of any subject. Each competitor may submit only one photograph, which must have been taken by him, and on the back of his print must be stated exactly what the photograph represents, also his age must be given.

The competition will be in two sections, A for readers aged 16 and over, and B for those under 16. Each competitor must state in which section his photograph is entered. There will be separate Overseas Sections, and in each section prizes of 21/-, 15/- and 10/6 will be awarded. Entries should be addressed: *July Photographic Contest, Meccano Magazine, Binns Road, Liverpool 13*. Closing dates: Home Section, 31st July; Overseas Section, 31st October, 1953.

Competitors who desire their entries to be returned should note the paragraph at the top of this page.

Competition Results and Solutions

HOME

FEBRUARY 1953 RAILWAY QUIZ

1st Prize: J. T. Smith, Birmingham 28. 2nd Prize: B. J. Holden, Burgess Hill. 3rd Prize: D. J. Parry, Stockport. Consolation Prizes: A. Keay, Blackpool; B. H. Billington, Southampton; R. Gomery, Scunthorpe.

MARCH 1953 PHOTOGRAPHIC CONTEST

1st Prize, Section A: J. Hampson, Farnborough; Section B: R. Rouse, Mansfield Woodhouse. 2nd Prize, Section A: W. Forsch, Stoke-on-Trent; Section B: J. Plewes, Kensworth. 3rd Prize, Section A: E. R. Worrall, Leicester; Section B: M. J. Starling, Reigate. Consolation Prizes: W. J. Hackett, Aberdeen; D. R. Forsyth, Cheadle Hulme; M. Goodey, Lowestoft; D. P. Stafford, Prestwich; R. Wonnacott, Plymouth; D. Willcocks, London N.10.

MARCH 1953 CROSSWORD PUZZLE

1st Prize: R. Driver, Wolsingham. 2nd Prize: L. Holman, Redruth. 3rd Prize: I. C. Robson, Herstononcoex. Consolation Prizes: J. M. Vallance, Clarkston; A. H. Jones, Wallasey; R. J. Pankhurst, Toftwood.

MARCH 1953 DRAWING CONTEST

1st Prize: C. J. Charles, Darlington. 2nd Prize: M. R. Burnett, Alderney, C.I. 3rd Prize: M. H. Briston, Dereham. Consolation Prizes: C. Hurd, Hull; J. R. B. Edwards, Farnborough; J. Walford, Earls Colne; J. E. Diamond, Welwyn Garden City; J. Ward, York; R. Sanderson, Sheffield 10; I. Waterson, Bexhill-on-Sea; E. G. Hodgkins, Stroud.

APRIL 1953 PHOTOGRAPHIC CONTEST

1st Prize, Section A: R. Wrigley, Clitheroe; Section B: J. Spoor, St. Germans. 2nd Prize, Section A: N. E. Mitchell, Gloucester; Section B: J. D. Lambe, Sheffield. 3rd Prize, Section A: J. L. Springett, London S.E.20; Section B: T. R. Cookson, Bournemouth. Consolation Prizes: J. M. Roberts, Rhyl; G. Ogilvie, Edinburgh 4; E. Bruce, Ashstead; P. G. Rose, Wigan; P. Reed, Preston; W. M. Newman, Cambridge; D. Russell, Birmingham 28; R. Firth, Bradford.

OVERSEAS

SEPTEMBER 1952 PHOTOGRAPHIC CONTEST

1st Prize, Section A: K. N. Murray, Copenhagen, Denmark; Section B: J. M. Demanuele, St. Julians, Malta G.C. 2nd Prize, Section A: R. T. Valder, Jinja, B.E.A.; Section B: V. Menzies, Gibraltar. 3rd Prize, Section A: R. Thacker, R.M. Commandos, Malta G.C.; Section B: J. Newlands, Hamburg, Germany. Consolation Prizes: J. Xuereb, Valletta, Malta G.C.; D. Rutherford, New Plymouth, N.Z.; I. Moreland, Greymouth, N.Z.; O. Corio, Stockholm, Sweden.

OCTOBER 1952 RAILWAY CONTEST

1st Prize: D. H. Ridgeway, Nice, France. 2nd Prize: B. Roberts, Valletta, Malta G.C. 3rd Prize: R. L. Buttmer, Dublin, Eire. Consolation Prizes: J. Pearse, St. Albans, N.Z.; G. V. White, St. Albans, N.Z.; R. Burke, Singapore, Malaya.

OCTOBER 1952 PHOTOGRAPHIC CONTEST

1st Prize, Section A: S. M. Hayward, Berne, Switzerland; Section B: J. E. Clarke, Dunedin, N.Z. 2nd Prize, Section A: D. W. Wilson, Bahia, Brazil; Section B: J. Hunt, Sliema, Malta G.C. 3rd Prize, Section A: T. Allen, Amsterdam, Holland; Section B: D. McKenzie, Napier, N.Z. Consolation Prizes: L. S. C. K. Pathirane, Dehiwala, Ceylon; M. Williams, Singapore 10, Malaya; C. B. Golding, Cape Town, S. Africa; P. Morrison, St. Albans, N.Z.; W. G. Nimmo, Durban, S. Africa.

NOVEMBER 1952 CROSSWORD PUZZLE

1st Prize: J. A. Stoupe, Auckland, N.Z. 2nd Prize: A. Coppola, Birkirkara, Malta G.C. 3rd Prize: W. McCarroll, Lower Hutt, N.Z. Consolation Prizes: D. W. Distant, Singapore 8, Malaya; I. G. Johnstone, Wellington, N.Z.; J. Lewis, Bombay, India.

NOVEMBER 1952 DRAWING CONTEST

1st Prize: M. Alder, Cape Town, S. Africa. 2nd Prize: M. Ring, Auckland, N.Z. 3rd Prize: A. C. Ramsden, Masterton, N.Z. Consolation Prizes: W. Lindsay, Dromore, N.I.; P. J. Marais, Wynberg, S. Africa; J. Gifford, Lenswood, S. Australia.

NOVEMBER 1952 PHOTOGRAPHIC CONTEST

1st Prize, Section A: J. Marshall, Madagascar; Section B: S. E. Hawke, Paris, France. 2nd Prize, Section A: G. Pearson, Copenhagen, Denmark; Section B: D. M. Wainwright, Montreal, Canada. 3rd Prize, Section A: S. A. Mills, Gibraltar; Section B: E. Olbrechts, Ninove, Belgium. Consolation Prizes: B. Natarajan, New Delhi, India; R. M. Thomas, Redcliffe, Australia; L. Benning, Cape Town, S. Africa; M. Pratt, Rondebosch, S. Africa; F. H. Barnes, Bombay, India; L. C. Murphy, Dublin, Eire.

DECEMBER 1952 PHOTOGRAPHIC CONTEST

1st Prize, Section A: G. Millington, Montreal, Canada; Section B: P. Neild, Kandy, Ceylon. 2nd Prize, Section A: E. L. Castle, Antwerp, Belgium; Section B: B. G. Cleator, Hawke's Bay, N.Z. 3rd Prize, Section A: R. Carnahan, Invercargill, N.Z.; Section B: L. T. Banks, Madrid, Spain. Consolation Prizes: L. O'Leary, Cork, Eire; T. N. Smith, Cape Town, S. Africa; A. May, Potchefstroom, S. Africa; P. Glanville, Kiltarnan, Eire; P. McCullen, Drogheda, Eire; H. Kasselmann, Johannesburg, S. Africa; R. G. St. Leger, George, S. Africa; A. Gray, Blackwood, Australia; J. Carter, Lockley, Australia.

SOLUTIONS

JANUARY 1953 COVER VOTING CONTEST

1. July. 2. June. 3. December. 4. March. 5. October. 6. May. 7. April. 8. September. 9. November. 10. January. 11. August. 12. February.

I	N	T	R	I	G	U	E		L	O	A	D
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The November 1952 Crossword Solution. A reproduction of the prize winning entry submitted by Brian Meese (aged 17), Moorends, Nr. Doncaster.

Fireside Fun

"Yes, he bought her a mink coat last year for her birthday, and this year she asked him for a car."
 "He is generous, isn't he? What car did she get?"
 "She didn't get one at all. He couldn't find a firm selling imitation cars."

"Gentlemen, I have been selling this marvellous cure for indigestion for more than 30 years and have never heard a word of complaint," proclaimed the quack doctor in the market place. "Now what does that show?"

"That dead men tell no tales," came a voice from the crowd.

"Yes, sir. We are really up to date in this restaurant. Everything here is cooked by electricity."

"Right. Then give this steak another shock or two."

"Did you go to school when you were a little boy, daddy?"

"Of course I did. I never missed a day."

"There you are, mother. You can see it won't do me any good either."

"What are the constituents of quartz?"

"Pints."

"I want one of your life-size enlargements of a snapshot. They cost 2/6 each, I believe."

"Yes, sir, dirt cheap. Have you brought your photograph?"

"Yes, here it is. The Queen Elizabeth leaving New York."

"Teacher told me I was a model boy an' he'll never tell you that."

"Of course he won't. Don't you know what a model is?"

"Well, what is it?"

"In the dictionary it says it is a small imitation of the real thing."

"I hope you peeled that apple before you ate it."

"Yes, mummy, I did."

"What did you do with the peel, then?"

"I ate that after the apple."

Insurance Doctor: "Have you ever been in hospital?"
 Applicant: "Yes, once."

Insurance Doctor: "Ah, you have, have you? What for?"

Applicant: "To see my aunt."

Teacher: "Now, can any boy tell me what dust is?"

Johnny: "Please, sir, it's mud with the juice squeezed out."



Old Lady: "Now, guard, find me a clean carriage in the middle of the train, and I hope there's no collision."

Guard: "You'll be quite safe, mum."

Old Lady: "It isn't myself I'm worrying about, but this basket has two dozen fresh eggs in it, and I wouldn't have them smashed for anything."

BRAIN TEASERS A FLOWERY IDEA

Below are seven words that do not look particularly interesting, but they have one curious feature. This is that the order in which they appear can be altered in such a manner that the first three columns will then spell downward the names of three well-known flowers. Can you re-write the lines in the block to give this result?

C A P I T A L
 I N I T I A L
 L O N G I N G
 O N E N E S S
 P E A C O C K
 S M U D G E D
 W E T H E R S

S.W.C.

FIND SOMEBODY YOU DISLIKE

The accompanying diagram introduces an unusual form of word



pyramid that can perhaps be best described as a word triangle. The successive words in this have one letter each more than the one before. A start is made with the letter B, and instead of giving clues to the words that follow, I am asking you just to find any seven words to fit in the triangle, provided that the last word describes a rather unpleasant individual!

Each word must contain the letters of the word above it, with a new letter added, but the order of the old letters may be changed as desired.

FIGURE OUT THE LETTERS

Can you read this if I tell you that 3 represents the letter L:

2 870 4574 2 078 7 324431 3741

SOLUTIONS TO LAST MONTH'S PUZZLES

Our first effort last month was not really a puzzle. In it I asked readers to make as large a collection as possible of three-letter words that were also standard dictionary words when reversed, and I offered a small prize to the sender of the best list. The result of this little contest will be given in next month's M.M.

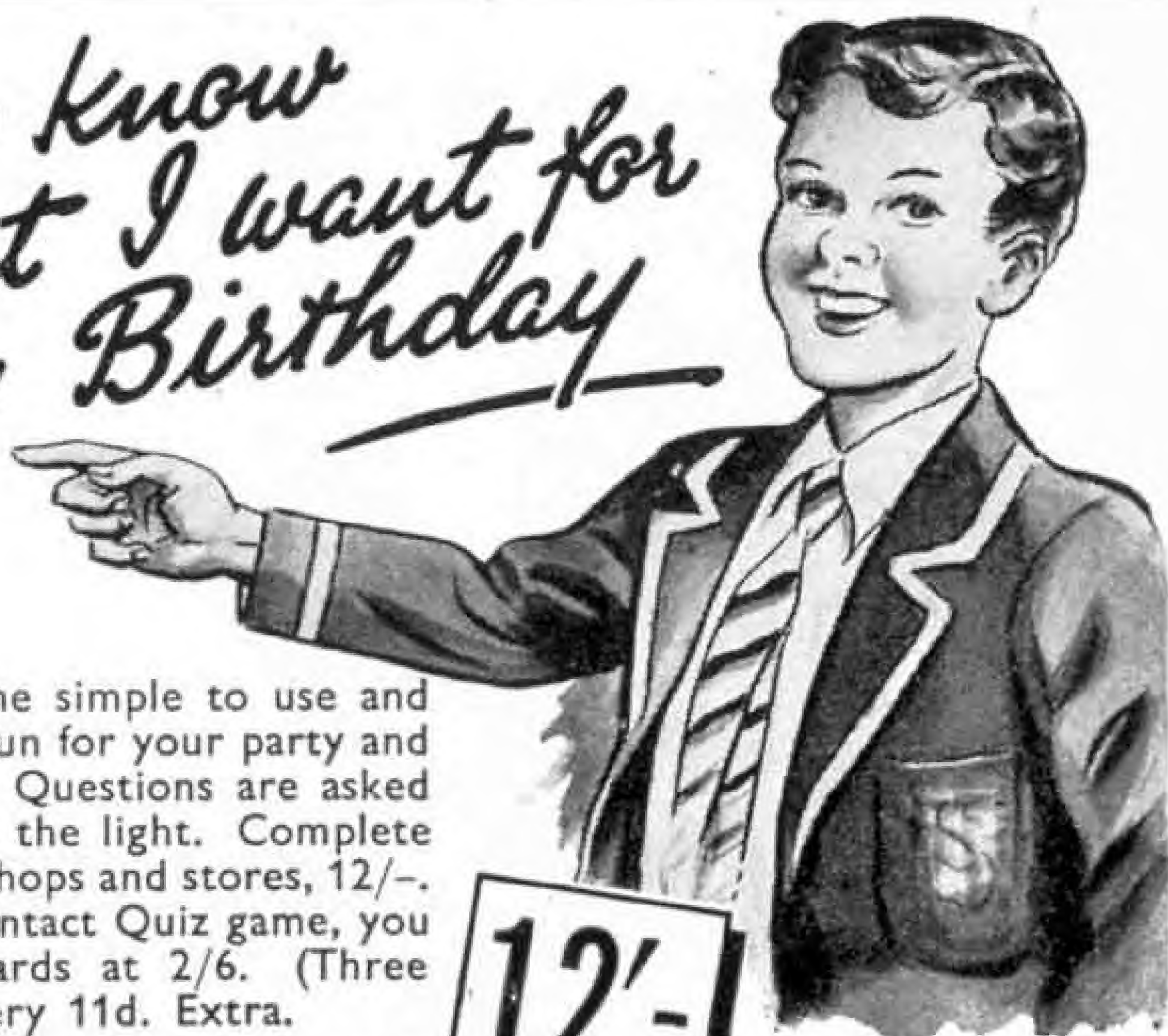
The familiar car names jumbled in our second puzzle last month were as follows: HUMBER, BRISTOL, HILLMAN, AUSTIN, ALVIS, STANDARD, JENSEN, WOLSELEY, ROLLS-ROYCE, JAGUAR, JOWETT and RILEY.

The window calculation in the third puzzle was a catch. The crescent-shaped space left open obviously has the same area as the overlap created, that is 1 sq. ft.

A little bit of arithmetic was required for our fourth puzzle last month. Taking one each of the coins mentioned would give a total of 6/4½, and 6/4½ divided into £51 gives 160. The number of half crowns, therefore, and indeed that of any of the coins, is 160.



*They know
what I want for
my Birthday*



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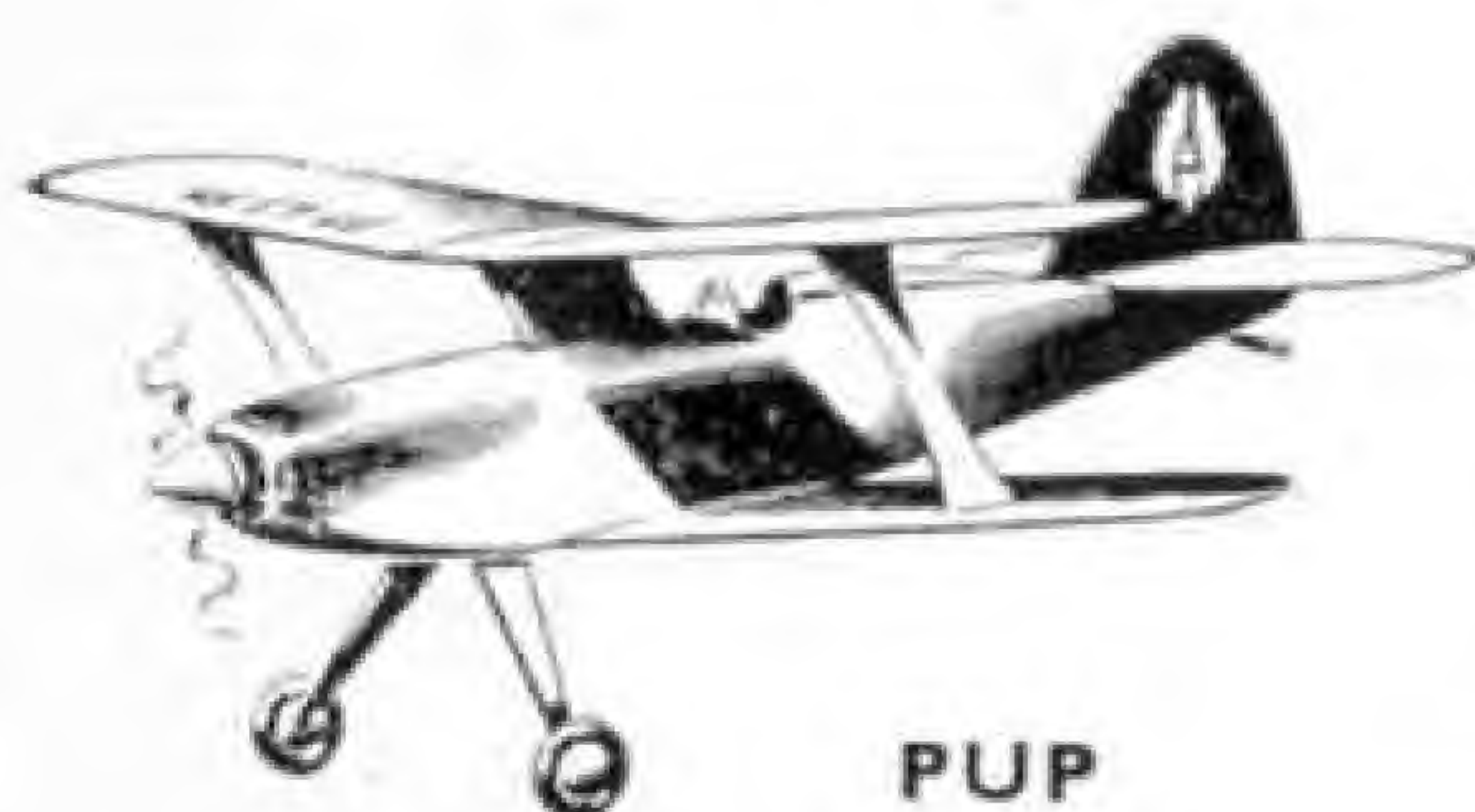
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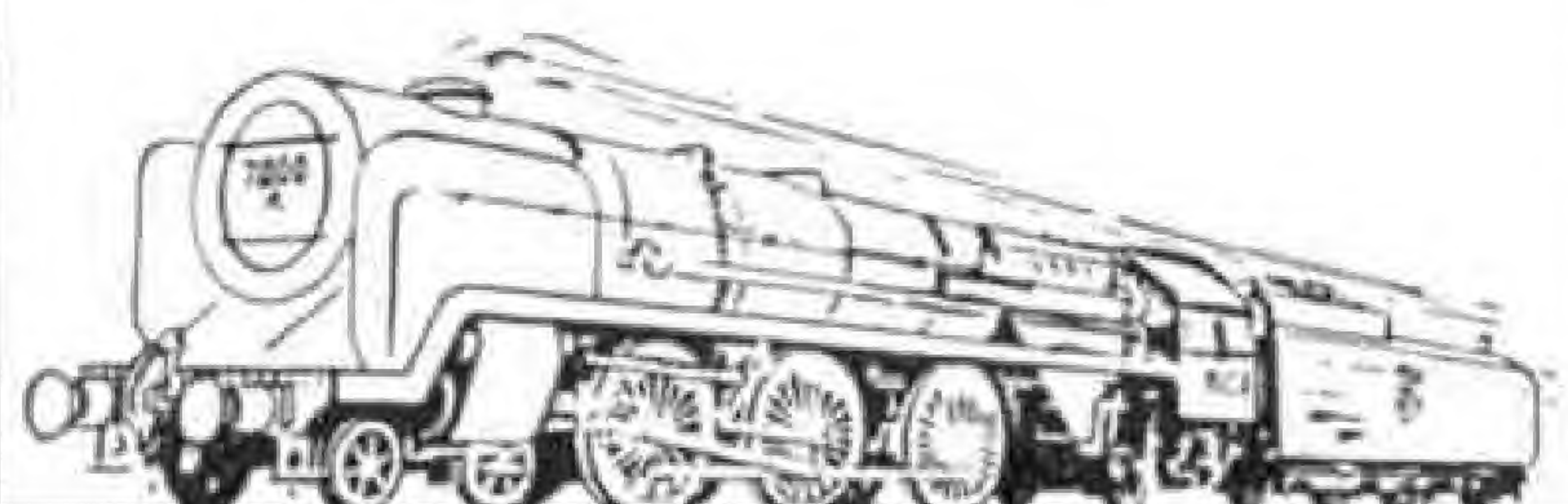


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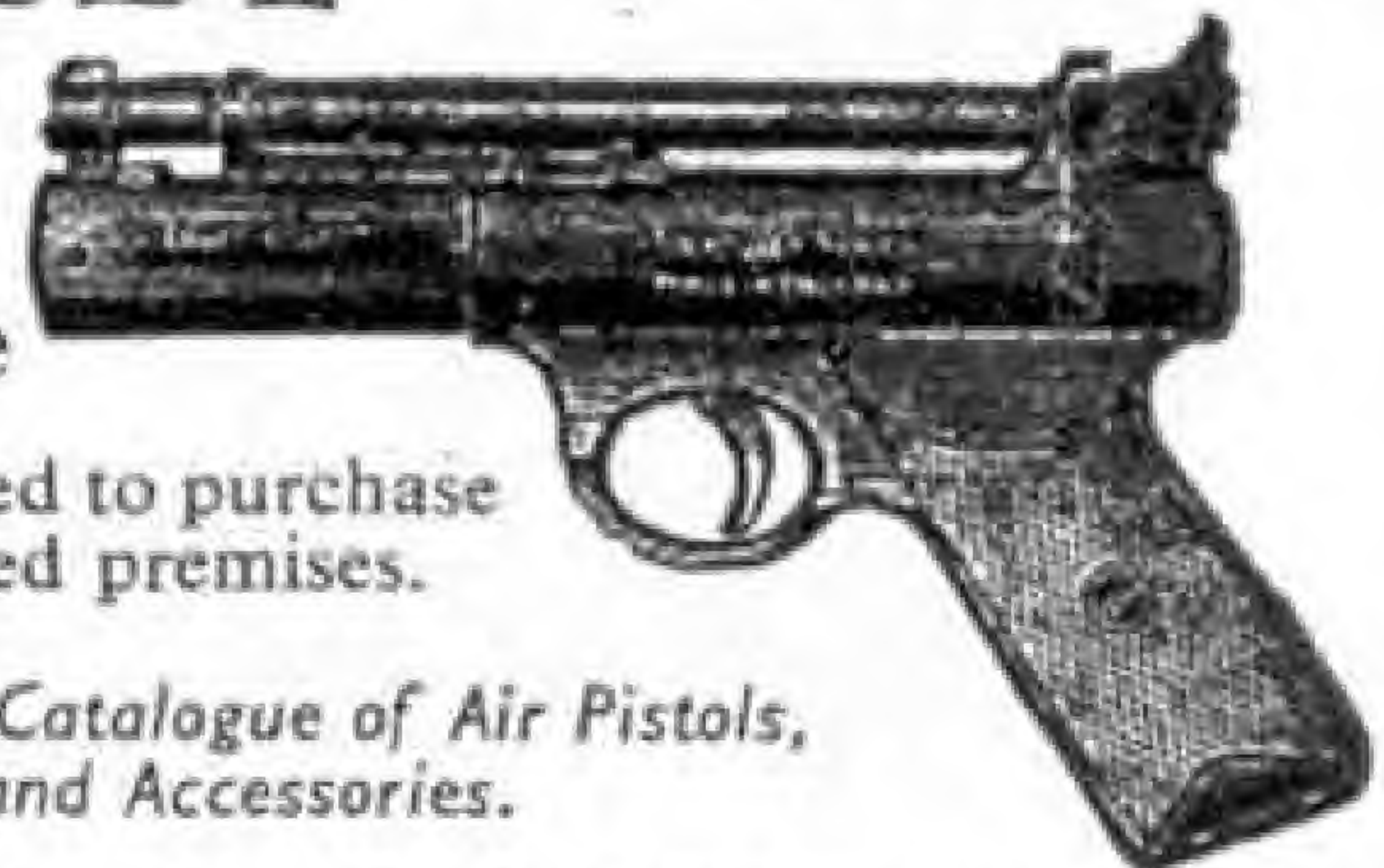
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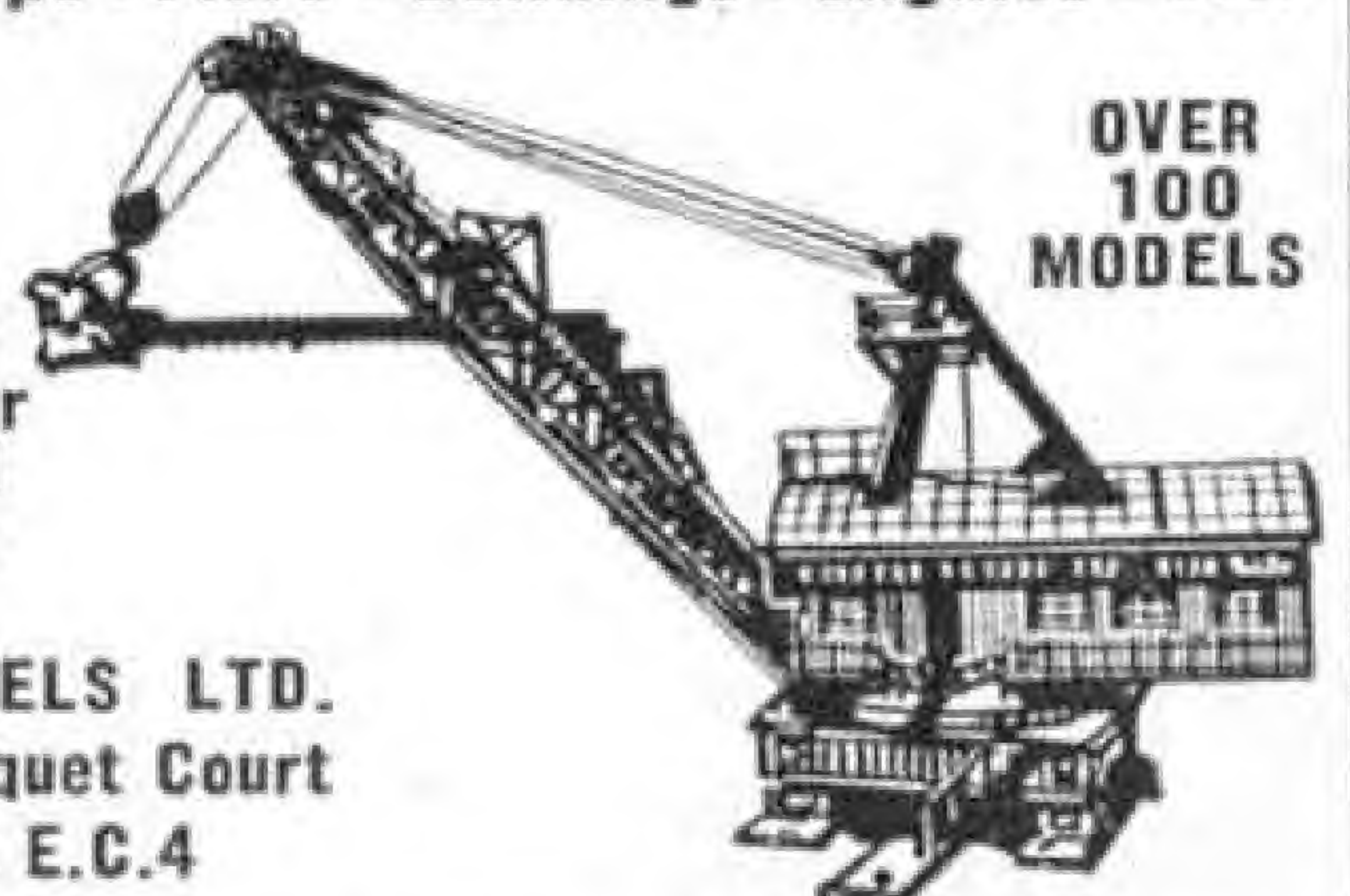
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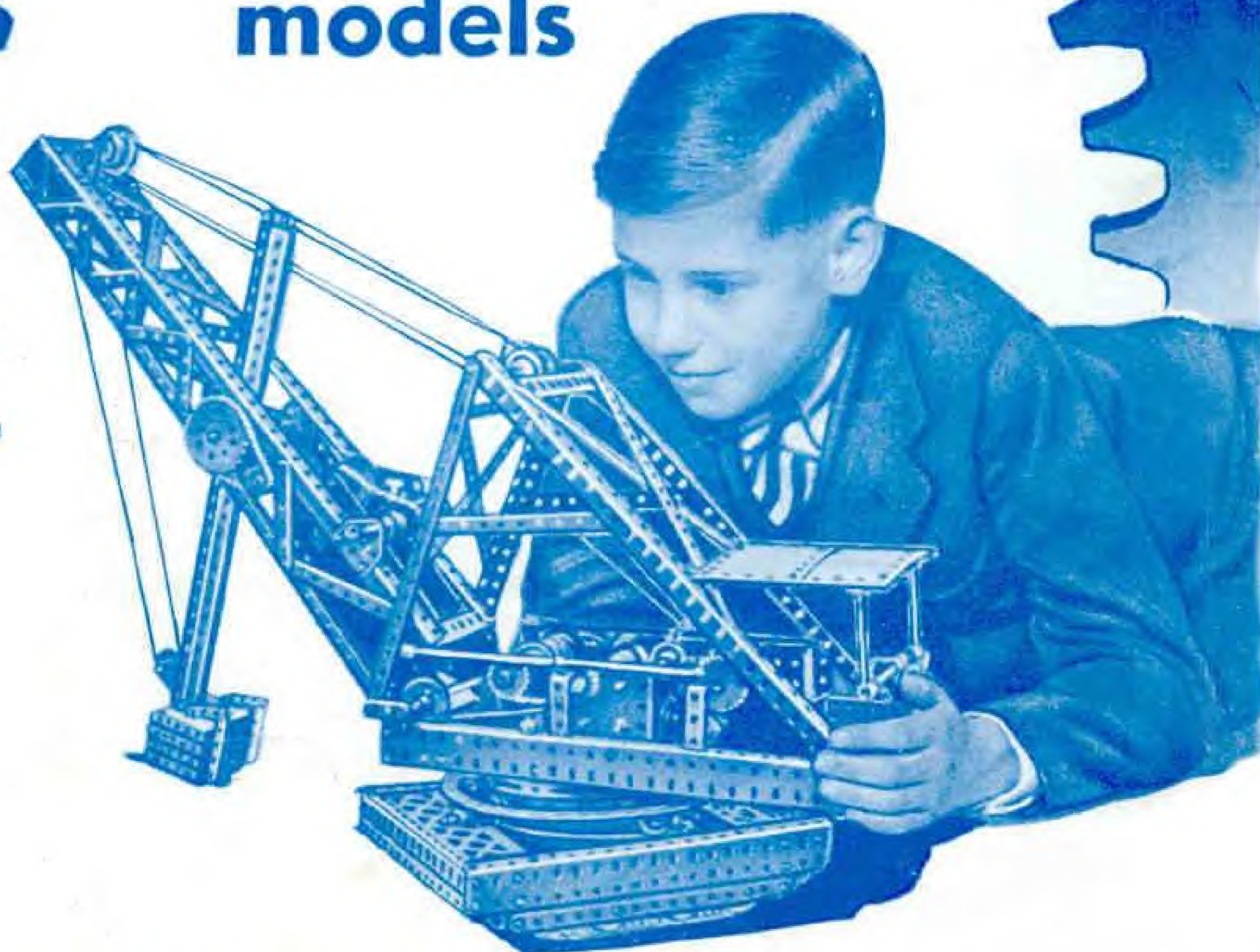
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